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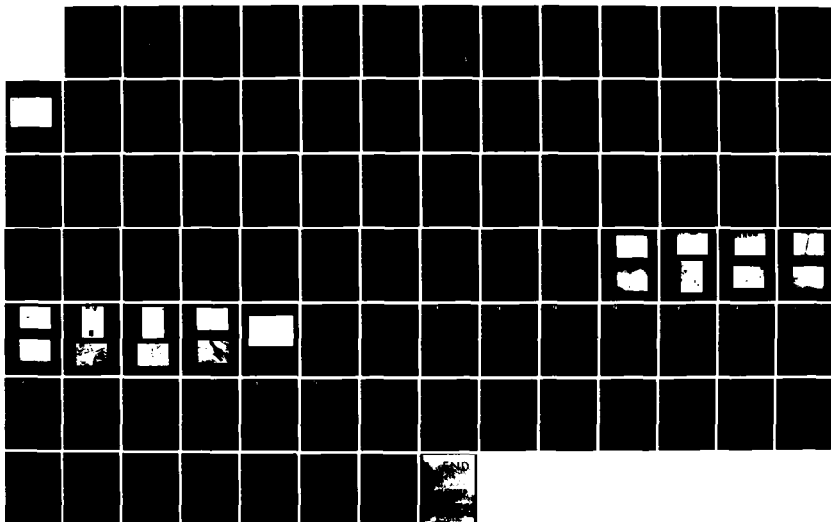
NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
SCOVILL RESERVOIR DAM. (U) CORPS OF ENGINEERS WALTHAM
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AD-A144 726

LOWER CONNECTICUT RIVER BASIN
HADDAM, CONNECTICUT

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SCOVILL RESERVOIR DAM
CT 00431

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM



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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. 02154

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) DAMS, INSPECTION, DAM SAFETY, Lower Connecticut River Basin Haddam, Connecticut		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Scovill Reservoir Dam is an earth embankment dam with stone masonry walls on the upstream and downstream faces. The dam is about 245 feet long, with a maximum height of 21 feet. The dam is judged to be in poor condition. The test flood would overtop the dam by about 0.7 feet. It has a storage area of 350 acre-feet; the size classification is thus small.		

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

Identification No.: CT 00431
Name of Dam: Scovill Reservoir Dam
Town: Haddam
County and State: Middlesex, Connecticut
Stream: Tributary to Candlewood Hill Brook
Date of Inspection: 6 November, 1979

BRIEF ASSESSMENT

Scovill Reservoir Dam is an earth embankment dam with stone masonry walls on the upstream and downstream faces. The dam is about 245 feet long, with a maximum height of 21 feet. A spillway section about 25 feet wide and 1 foot deep is located in the central portion of the dam. An abandoned gate structure is located near the spillway section.

Scovill Reservoir is used for recreational purposes by a local fish and game organization. It has a storage area of 350 acre-feet; the size classification is thus small. A breach of the dam could affect several residential homes along Candlewood Hill Brook, some commercial establishments in the Village of Higganum, and Connecticut State Highway Route 9. Significant economic loss is to be expected from a dam failure flood wave; the dam has been classified as having a high hazard potential.

The dam is judged to be in poor condition. The upstream face of the dam has been overtopped and extensive erosion of the crest is unchecked. Brush is growing on the upstream slope and crest. The downstream area, just below the dam, is wet and spongy, with some seepage observed. Trees are growing at the base of the downstream stone masonry face. The spillway, which consists of an unlined section at the crest where the downstream masonry wall is stepped-down, has eroded significantly and water flowing over the crest continues to cause erosion.

The capacity of the spillway is inadequate to pass the 0.75 PMF spillway test flood outflow without overtopping the dam. The test flood would overtop the dam by about 0.7 feet. The spillway would pass only about 14 percent of the test flood outflow without overtopping the dam.

Within one year of receipt of the Phase I Inspection Report, the owner should insure that an engineering investigation be performed by a qualified registered engineer to determine procedures for implementing the following: 1) Modification of the spillway



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF
NEDED-E

MAY 23 1966

Honorable Ella T. Grasso
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor Grasso:

Inclosed is a copy of the Scovill Reservoir Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. The report is based upon a visual inspection, a review of past performance, and a preliminary hydrological analysis. A brief assessment is included at the beginning of the report.

The visual inspection has revealed some erosion of the embankment at the unlined spillway channel. In addition, the preliminary hydrologic analysis has indicated that the spillway capacity for the Scovill Reservoir Dam would likely be exceeded by floods greater than 14 percent of the 3/4 Probable Maximum Flood (3/4 PMF), the test flood for spillway adequacy. Our screening criteria specifies that a dam of this class which does not have sufficient spillway capacity to discharge fifty percent of the PMF, should be adjudged as having a seriously inadequate spillway. Due to the erosion of the unlined spillway channel and the inadequacy of the spillway, the dam has been assessed as unsafe non-emergency until the corrective measures as outlined in Section 7 of the report are completed.

The term "unsafe" applied to a dam because of an inadequate spillway does not indicate the same degree of emergency as that term would if applied because of structural deficiency. It does indicate, however, that a severe storm may cause overtopping and possible failure of the dam, with significant damage and potential loss of life downstream.

It is recommended that the reservoir level should be immediately lowered to prevent discharge over the spillway until the present spillway is modified to prevent erosion of soil from the crest of the embankment. In addition, it is recommended that within twelve months from the date of this report the owner of the dam engage the services

NEDED-E

Honorable Ella T. Grasso

of a professional or consulting engineer to determine by more sophisticated methods and procedures the magnitude of the spillway deficiency. Based on this determination, appropriate remedial mitigating measures should be designed and completed within 24 months of this date of notification. In the interim a detailed emergency operation plan and warning system should be promptly developed. During periods of unusually heavy precipitation, round-the-clock surveillance should be provided.

I have approved the report and support the findings and recommendations described in Section 7, with qualifications as noted above. I request that you keep me informed of the actions taken to implement these recommendations since this follow-up is an important part of the non-Federal Dam Inspection Program.

A copy of this report has been forwarded to the Department of Environmental Protection, the cooperating agency for the State of Connecticut. This report has also been furnished to the owner of the project, Mrs. Fisher of Guilford, Connecticut.

Copies of this report will be made available to the public, upon request to this office, under the Freedom of Information Act, thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Protection for the cooperation extended in carrying out this program.

Sincerely,


MAX B. SCHEIDER

Colonel, Corps of Engineers
Division Engineer

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SCOVILL RESERVOIR DAM

CT 00431

LOWER CONNECTICUT RIVER BASIN

HADDAM, CONNECTICUT

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

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design to prevent erosion of the spillway section (the reservoir level should be lowered immediately to prevent discharge over the spillway); 2) repair of the upstream face and erosion protection for the slope; 3) removal of trees at the base of the downstream face of the dam; 4) repair of the outlet structure to allow control of reservoir level; and 5) perform a hydrologic and hydraulic study to determine spillway capacity and freeboard requirements with respect to the spillway test flood discharge and recommend alterations, if required.

The owner should also carry out the following operational and maintenance procedures: 1) restore the eroded area on the downstream side of the right abutment; 2) monitor seepage at the downstream face on a regular basis; 3) clear crest of brush and trees and establish adequate grass cover; 4) establish a formal annual inspection program including documentation of significant changes in flow; and 5) develop a formal surveillance and flood warning plan.

A handwritten signature in cursive script, reading "S. Giavara", is written over a horizontal line.

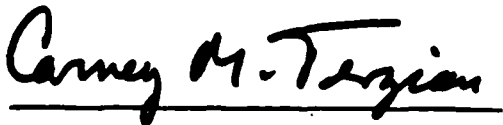
S. Giavara, P.E.
President

Registered, CT 7634

This Phase I Inspection Report on Scovill Reservoir Dam has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.



ARAMAST MAHTESIAN, MEMBER
Geotechnical Engineering Branch
Engineering Division



CARNEY M. TERZIAN, MEMBER
Design Branch
Engineering Division



RICHARD DIBUONO, CHAIRMAN
Water Control Branch
Engineering Division

APPROVAL RECOMMENDED:



JOE B. FRYAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation: however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The Phase I Investigation does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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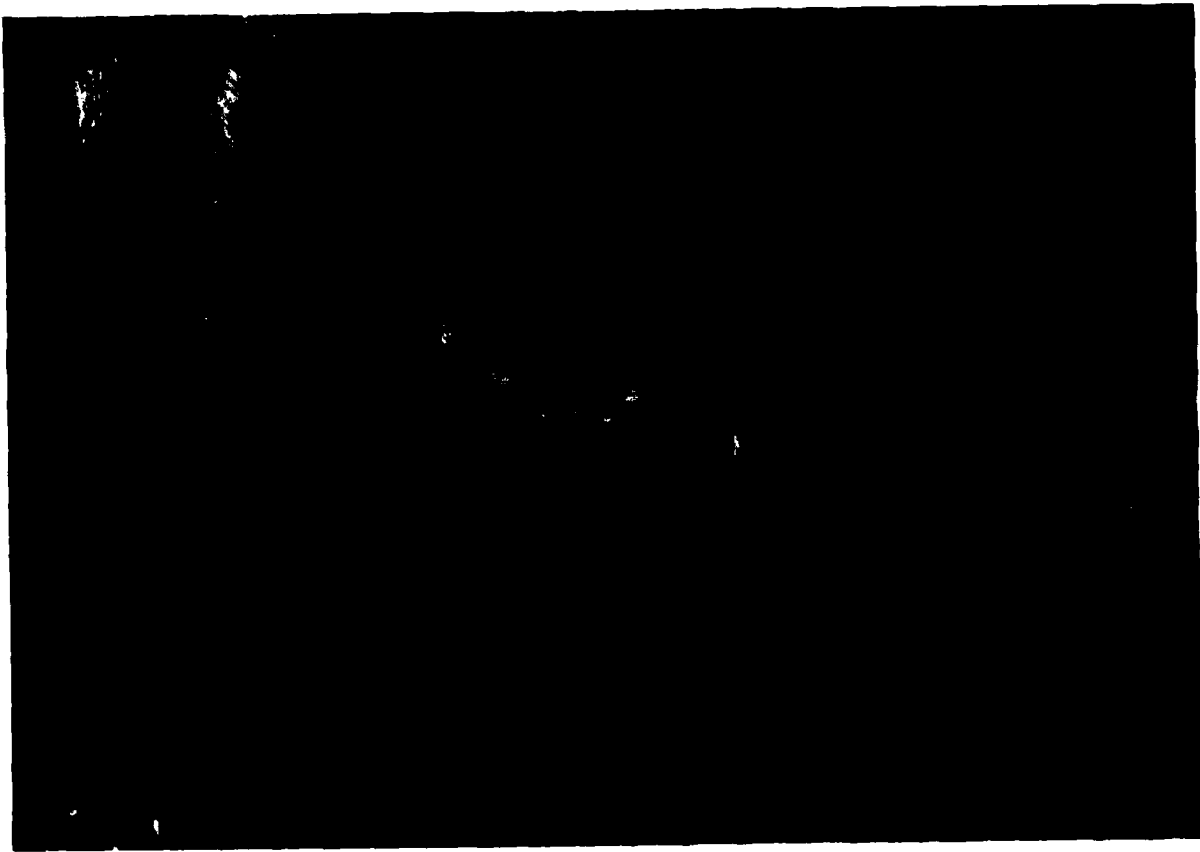
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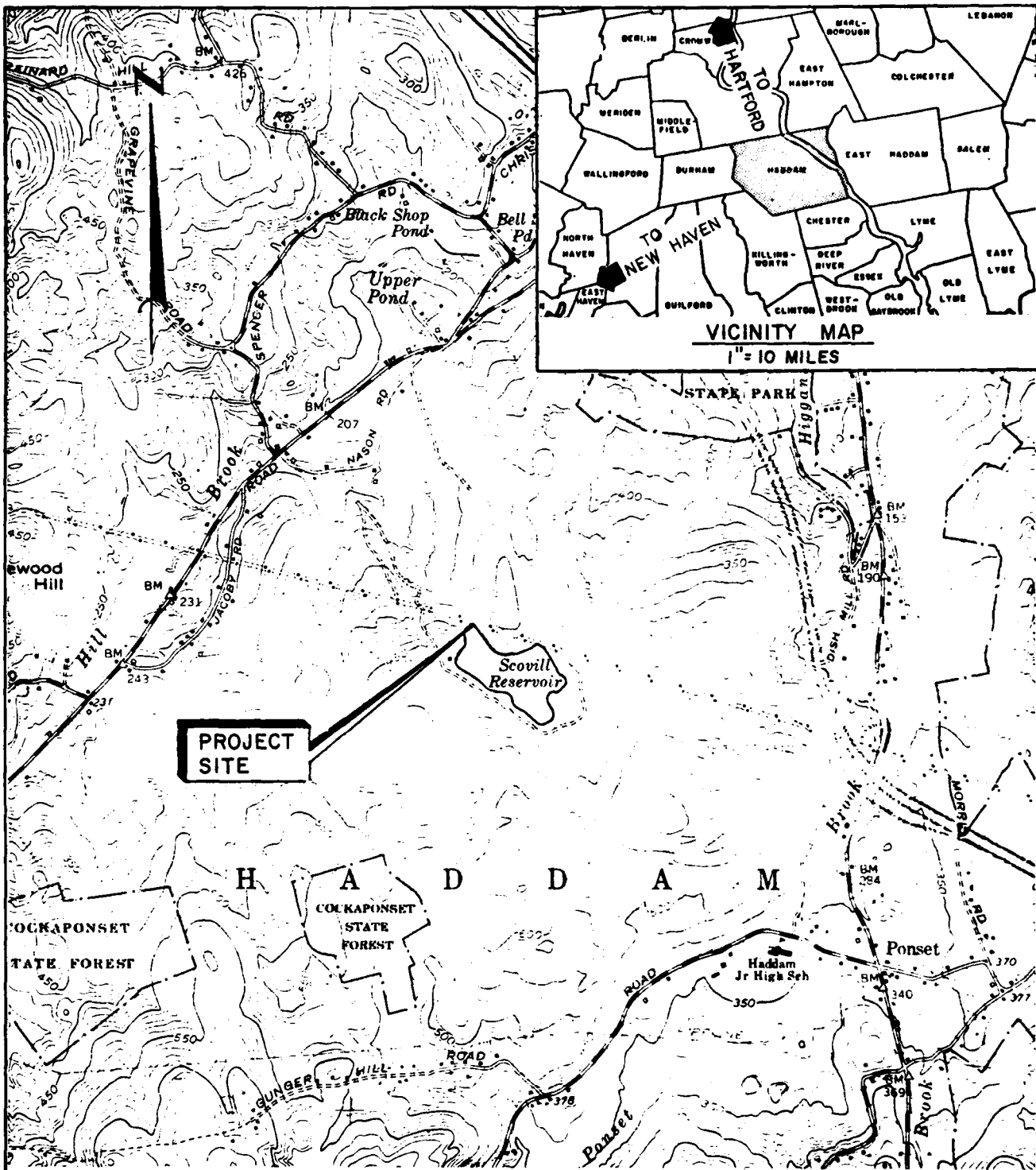
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<u>Appendix</u>	<u>Description</u>
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B	ENGINEERING DATA
C	PHOTOGRAPHS
D	HYDROLOGIC AND HYDRAULIC COMPUTATIONS
E	INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS



Overview Photo: Scovill Reservoir Dam



SCOVILL RESERVOIR DAM
LOCATION MAP
 HADDAM, CONNECTICUT

SCALE IN FEET
 2000 1000 0 2000

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT
SCOVILL RESERVOIR DAM - CT 00431

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL:

a. Authority. Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection through the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Flaherty Giavara Associates, P.C. has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed was issued to Flaherty Giavara Associates, P.C. under a letter of 19 October 1979 from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-80-C-0001 has been assigned by the Corps of Engineers for this work.

b. Purpose.

1) Perform technical inspection and evaluation of non-federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-federal interests.

2) Encourage and assist the States to initiate quickly effective dam safety programs for non-federal dams.

3) To update, verify and complete the National Inventory of Dams.

1.2 DESCRIPTION OF THE PROJECT:

a. Location. The Scovill Reservoir Dam is located in Haddam, Connecticut on a tributary stream to Candlewood Hill Brook. The reservoir is located approximately 2 miles southwest of the village of Higganum. The reservoir is shown on the U.S.G.S. Topographic Map "Haddam Quadrangle" at a latitude of 41°29'38" and a longitude of 72°34'42". The Location Map on page vi shows the location of the structure.

b. Description of Dam and Appurtenances. The Scovill Reservoir Dam is an earth embankment dam with stone masonry walls on the upstream and downstream faces. The total length of the dam is 245 feet. The spillway is located just west of the center of the dam and is 25 feet in width.

The earth embankment to the right (west) of the spillway is 12 feet wide, with a 2:1 slope to the reservoir water level. The spillway crest is assumed to be at elevation 100. The earth embankment east of the spillway is 17 feet wide, with a 2:1 slope to the reservoir water level. The elevation at the top of the earth embankment is approximately El. 101 (1 foot higher than spillway). The slope of the downstream masonry wall is 1 horizontal to 5 vertical. The upstream stone masonry wall is located about 35 feet off the face of the downstream wall. The top elevation of the upstream masonry wall is approximately El. 97.5 and submerged. The height of the upstream masonry wall is 15± feet at the spillway. The maximum structural height of the dam is 21 feet at the downstream face.

The appurtenant structures consist of a spillway and an outlet works structure. The spillway is depressed 1 foot into the downstream stone masonry wall for a length of 25 feet. The invert of the spillway section between the upstream and downstream stone masonry walls consists of earth embankment material. The concrete outlet works structure is located at the upstream face of the stone masonry wall. The structure is 4 feet wide and 6.5 feet long.

c. Size Classification. Scovill Reservoir has a storage volume of 350 acre-feet and a dam height of 21 feet. Storage of less than 1,000 acre-feet and a height of less than 40 feet places this structure in the "small" category according to guidelines established by the Corps of Engineers.

d. Hazard Classification. The dam is classified as having a "high" hazard potential. More than 10 houses are located in the dam failure impact area. The village of Higganum is located about 2.0 miles downstream with a variety of commercial and residential structures. In addition Connecticut State Highway Route 9 is located 2± miles downstream and would suffer substantial economic damage due to a dam failure flood wave.

In the village the flood wave has a water surface elevation of about 85 feet M.S.L. equivalent to a depth of 7.5 feet. The scattered residential homes along Candlewood Hill Brook would experience flood flow depths of about 3 to 6 feet (water surface elevations ranging from El. 150± to El. 210± MSL). It appears that a sudden breach of the dam would possibly cause some loss of life and excessive economic losses.

e. Ownership. This dam is presently owned by Mrs. Fisher, Grove Hill Road - Sachems Head, Guilford, Connecticut; phone 203/453-3493, business phone 203/453-4141. The past owner of the dam was the Scovill Hoe Co., Haddam Connecticut.

f. Operator. There is no operator who is responsible for the day to day operation of this dam.

g. Purpose of Dam. At present the reservoir is utilized for recreational purposes by a local fish and game organization. General public access is not allowed to the dam. Historically, the dam was used by the Scovill Hoe Company for water flowage regulation. Water was released from the reservoir during the summer months to augment stream flow to provide power for the operation of machinery.

h. Design and Construction History. The dam is reported to have been constructed in the late 19th century. There was no documented evidence to support this date. There was no design or construction information recovered and probably none exists.

i. Normal Operation Procedure. The outlet works have not been operated since the early 1940's and the sluiceways and valves remain closed. During the fall, winter, and spring the spillway is operational, conveying flow over the top of the dam. Perhaps during times of drought and during the summer months the inflow is exceeded by evaporation and underflow and the reservoir level reportedly drops to below the spillway crest.

1.3 PERTINENT DATA:

a. Drainage Area. The drainage area of Scovill Reservoir is 0.27 square miles. The watershed is undeveloped and wooded. The average slope of the watershed is 8± percent. There are no storage areas within the watershed.

b. Discharge at Dam Site.

1) The outlet works conduit sizes and locations could not be confirmed by visual inspections at the dam. Conversations with the past owner of the dam (Scovill Hoe Co.) indicated that the outlet works consist of two sluiceways through the dam structure. Evident at the dam site was an opening in the downstream stone masonry wall 1.5± feet square approximately 9 feet below the spillway crest. In addition a deteriorated metal conduit was noted at the base of the dam below the spillway.

2) There are no known records of past floods or flood stage heights at the dam.

3) The ungated spillway capacity at the top of dam - 75 CFS at El. 101.0.

4) The ungated spillway capacity at test flood elevation - 156 CFS at El. 101.6.

5) The gated spillway capacity at normal pool elevation is not applicable at this dam.

6) The gated spillway capacity at test flood elevation is not applicable at this dam.

7) The total spillway capacity at test flood elevation - 166 CFS at El. 101.7.

8) The total project discharge at the top of dam elevation - equivalent to the spillway capacity of 75 CFS at El. 101.0.

9) The total project discharge at test flood elevation - 549 CFS at El. 101.7.

c. Elevation. (ft. above MSL)

- 1) Streambed at toe of dam.....80.0
- 2) Bottom of cut-off.....N/A
- 3) Maximum tailwater.....N/A
- 4) Recreation pool.....N/A
- 5) Full flood control pool.....N/A
- 6) Spillway crest.....100
- 7) Design surcharge (Original Design).....Unknown
- 8) Top of dam.....101
- 9) Test flood design surcharge.....101.7

d. Reservoir. (Length in feet)

- 1) Normal pool.....1700
- 2) Flood control pool.....N/A
- 3) Spillway crest pool.....1700
- 4) Top of dam.....1705
- 5) Test flood pool.....1720

e. Storage. (acre-feet)

- 1) Normal pool.....325
- 2) Flood control pool.....N/A
- 3) Spillway crest pool.....325

- 4) Top of dam.....350
- 5) Test flood pool.....365

f. Reservoir Surface. (acres)

- 1) Normal pool.....27.5
- 2) Flood-control pool.....N/A
- 3) Spillway crest.....27.5
- 4) Test flood pool.....28.9
- 5) Top of dam.....28.4

g. Dam.

- 1) Type: Earth embankment, upstream and downstream stone masonry walls
- 2) Length: 245 feet
- 3) Height: 21 feet
- 4) Top Width: 12-17 feet
- 5) Side Slopes: Downstream: 1 horizontal to 5 vertical
Upstream: 2 horizontal to 1 vertical
- 6) Zoning: Unknown
- 7) Impervious Core: Unknown
- 8) Cut-off: Unknown
- 9) Grout Curtain: Unknown

h. Diversion and Regulating Tunnel.

- 1) Type: Not Applicable
- 2) Length: Not Applicable
- 3) Closure: Not Applicable
- 4) Access: Not Applicable
- 5) Regulating Facilities: Not Applicable

i. Spillway.

- 1) Type: Depressed section in downstream stone masonry wall
- 2) Length of weir: 25 feet
- 3) Crest elevation: 100 feet
- 4) Gates: None
- 5) U/S Channel: Reservoir
- 6) D/S Channel: Gravel, cobbles and scattered boulders

j. Regulating Outlets.

- 1) Invert: Location unknown
- 2) Size: Unknown
- 3) Description: Unknown
- 4) Control Mechanism: Valve stem visible at dam. Sluice-gate lifting device removed from outlet works structure.

SECTION 2 - ENGINEERING DATA

2.1 DESIGN:

No design data for this dam and its appurtenances has been recovered and probably none exists.

2.2 CONSTRUCTION DATA:

No record of construction is available for this dam.

2.3 OPERATIONAL DATA:

No operation records of this facility are maintained.

2.4 EVALUATION:

a. Availability. There are no plans, specifications or computations available from the owner, State, or Federal offices regarding the design, construction or any subsequent repairs or modifications to this dam.

b. Adequacy. The lack of in-depth engineering data did not allow for a definitive review. Therefore the adequacy of this dam could not be assessed from the standpoint of reviewing design and construction data, but is based primarily on visual inspections, past performance and sound engineering judgment.

c. Validity. There is no reason to question the validity of the available data.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS:

a. General. Based on visual inspection, history and general appearance, the Scovill Reservoir Dam is in poor condition. The upstream face of the dam has been overtopped and extensive erosion of the crest is unchecked. Brush is growing on the upstream slope and crest. The downstream area, just below the dam, is wet and spongy, with some seepage observed. Trees are growing at the base of downstream stone masonry face. The spillway which consists of an unlined section at the crest where the downstream masonry wall is stepped-down, has eroded significantly and water flowing over the crest continues to cause erosion.

The gate mechanism at the outlet structure is inoperable resulting in no drawdown capability at the dam.

b. Dam. The dam is an earth embankment with stone masonry walls on the upstream and downstream faces.

1) Upstream Face - The upstream face of the dam was submerged below the reservoir level at the time of inspection, as shown in Photos No. 1 and 2. A line of capstones, apparently corresponding to a stone masonry wall on the upstream face, was visible below the reservoir surface. Photo No. 10 shows the approximate location of the upstream face about 2.5 feet below the reservoir surface. The inspector in the photo is standing along the line of the capstones.

A partially submerged slope extends upward about 3 to 4 ft from the capstones at the upstream face to the crest. This slope is fairly flat and irregular and has no riprap slope protection. Numerous erosion features are visible on the portion of the slope above the reservoir level. The configuration and general appearance of the slope suggests that the present slope is a product of erosion of a steeper original slope which has been eroded toward the crest. The portion of the slope above the reservoir level is overgrown with small brush (Photo No. 2).

2) Crest - The crest of the dam is covered with grass and some small brush as shown in Photos No. 2 and 3. The crest slopes slightly downward toward the reservoir in some locations.

3) Downstream Face - A dry stone masonry wall forms the downstream face of the dam, as shown in Photos No. 4, 5, 6 and 7. Loss of soil has occurred through some of the larger openings between the stones in the wall, an example of which is shown in Photo No. 12. The void shown in Photo No. 12 extends about 4 ft back into the downstream face. There are a number of trees growing at the base of the wall, as shown in Photos No. 11 and 13, some of which have roots growing into the wall, as shown in Photo No. 11. Bedrock outcrops at the base of the wall at the left side of the spillway channel. A small amount of seepage through the voids in the stone masonry just above the bedrock contact was

observed at the left (east) side of the dam.

Much of the ground surface below the downstream face to the right of the spillway channel was wet and spongy. Seepage was observed at about Sta. 1+55 in this area. The seepage was clear with no visual evidence of turbidity. Photo No. 14 shows a close-up of the seepage area.

Extensive erosion has occurred on the downstream side of the right abutment, as shown in Photo No. 15. The erosion scarp visible in the photo is about 20-30 ft in length and 2-3 ft high. Several erosion gullies up to 3 ft wide and 2 ft deep extend downstream from the scarp. The soil in this area was saturated and spongy.

c. Appurtenant Structures.

1) Spillway - The spillway consists of a section of the crest where the downstream masonry wall is stepped-down about 1 ft, having a width of 25 ft and capped with concrete at the downstream face, shown in Photo No. 4. Water was overflowing the spillway at the time of inspection. As shown in Photo No. 8, the crest of the dam is unlined in the spillway section and is overgrown with weeds and small brush. Water flowing over the unlined spillway section has eroded a channel about 5-ft-wide and up to 6-in.-deep into the crest (Photo No. 9).

At the reservoir side of the spillway section there is a vertical stone faced masonry wall. This wall was submerged in about 2.5 feet of water and was not visible for inspection. The embankment spillway area is lower in elevation along the center line of the spillway where overflow water was confined during the field inspection.

Adjacent to the area of overflow water (5 feet wide by 6 inches deep) the spillway section was vegetated with grasses and small weeds. The downstream face of the spillway consists of capstones which appeared to be in good condition and stable. A concrete apron approximately 1.5 feet wide and 6 inches thick extended the full length of the spillway over the capstones.

The downstream spillway channel is an unlined natural stream bed. A concrete block wall across the downstream channel creates a shallow plunge pool at the downstream face. The sides and bottom are lined with cobbles and boulders and is stable. The approach to the spillway is directly from the reservoir and was clear and free of debris.

2) Outlet Gate - There is a concrete outlet gate structure at the upstream face on the left side of the spillway. The base of the structure was submerged below the reservoir level.

The outlet works are not operational. Bolts grouted into the top of this structure suggest that there was at one time a device

for operating the submerged gates. A metal valve stem (2-inch hex) was located adjacent to the outlet structure, however the handle had been removed.

Conversations with the owner of the dam (Scovill Hoe Co.) indicated that the outlet works have not been operated for more than thirty years (1940's). The outlet works reportedly consisted of two sluiceways through the dam structure. One was purportedly at mid-height and the other at the bottom of the reservoir.

On the downstream face of the dam, an opening in the stone about 1.5 feet square was observed approximately 9 feet below the east edge of the spillway. The location of this opening did not allow close inspection. In addition a deteriorated 6-inch diameter pipe was noted at the base of the dam below the spillway, as shown in Photo No. 16. It could not be determined whether this conduit was the remains of the lower outlet sluiceway.

d. Reservoir Area. The reservoir has well vegetated banks at slight to moderate slopes. There was no evidence of slides or sloughing along the banks of the reservoir (Photo No. 17).

No sediment deposits were observed in the reservoir. The watershed of the reservoir is totally undeveloped, therefore sediment sources would be limited to natural runoff.

e. Downstream Channel. Overflow at the dam from the spillway flows into a natural stream which forms at the base of the dam. The channel width varies from 10 to 15 feet with steep side slopes. Some evidence of stream bed degradation was observed downstream of the dam. Major bank erosion was noted at a bend in the stream bank approximately 100 feet downstream of the dam. The bed consists of gravel and cobbles with scattered boulders and the stream banks are wooded.

3.2 EVALUATION:

Based on the visual inspection, the condition of the dam is considered to be poor. The inspection disclosed the following items which require attention:

a. Water flowing over the crest in the unlined spillway section may slowly erode soil from the crest. This item requires immediate attention.

b. There are several trees growing at the base of the stone masonry wall which forms the downstream face of the dam and roots from these trees are growing into the wall.

c. Seepage is occurring downstream from the dam.

d. Extensive erosion has occurred on the downstream side of the right abutment.

e. Extensive erosion of the earth slope above the upstream face has apparently taken place.

f. There is no drawdown capability for the dam because the existing outlet control structure is abandoned and inoperable.

SECTION 4 - OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 OPERATIONAL PROCEDURES:

a. General. Since the outlet structure for the dam is not operable, the water level for Scovill Reservoir is not controlled and no formal operational procedures are followed.

b. Description of any Warning System in Effect. There is no warning system of any kind in effect at the time of the inspection.

4.2 MAINTENANCE PROCEDURES:

a. General. No maintenance of any kind is performed on the dam.

b. Operating Facilities. There are no formal maintenance procedures followed for the operating facilities.

4.3 EVALUATION:

Regular operational maintenance procedures for this dam and its appurtenances have not been developed or implemented. In view of the lack of drawdown capability at the dam, it is important that the Owner make arrangements to have the outlet control structure repaired and made operational.

An emergency action plan should be prepared to prevent or minimize the impact of failure. This plan should list the expedient action to be taken and authorities to be contacted.

SECTION 5 - EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 GENERAL:

The Scovill Reservoir Dam is an earth embankment dam with stone masonry walls on the upstream and downstream faces. The upstream stone masonry wall is submerged. The spillway is 25 feet wide with a 1 foot depressed section in the downstream stone masonry wall.

The spillway acts as a broad crested weir, with a sloping upstream face and a near vertical downstream face. At a stage of greater than 1.0 feet, flow will go over the top of the dam embankment. The capacity of the spillway at this stage is 75 CFS.

The watershed area is 0.27 square miles which consists of moderate to steep sloping hillsides surrounding the reservoir. The watershed is wooded and undeveloped. There are no upstream impoundments or other significant storage areas.

5.2 DESIGN DATA:

No specific design data is available for this dam or its appurtenances.

5.3 EXPERIENCE DATA:

No information is available on past flood experience or flood stage at the dam.

5.4 TEST FLOOD ANALYSIS:

Recommended guidelines for the Safety Inspection of Dams by the Corps of Engineers were used to determine the required spillway "Test Flood." This dam is classified as HIGH hazard structure and is SMALL in size. Guidelines indicate that the test flood could range from 1/2 P.M.F. to a full P.M.F. A 3/4 P.M.F. was selected as the test flood, because the dam height and storage volume are on the lower end of the small dam classification, and the hazard classification is high. It was concluded that a spillway test flood of 3/4 P.M.F. most closely relates to conditions at the Scovill Reservoir Dam.

The magnitude of the 3/4 P.M.F. was developed using the Soils Conservation Service method for determining flow rates as described in "Design of Small Dams" by the Bureau of Reclamation. Due to the small watershed area of this dam, three peak flow

rates were developed based on storm durations of 1, 6, and 24 hours. Peak flows for these three duration storms were 1,179 CFS, 523 CFS, and 162 CFS respectively. Triangular hydrographs were developed based on these peak flows, with the time durations set so that the hydrograph would contain the same volume of water as the estimated storm runoff.

The stage-discharge relationships were developed assuming the spillway would function as a broad crested weir with a weir coefficient of 3.0. At a stage of 1 foot above the crest the spillway capacity is 75 CFS. At a stage greater than 1 foot, the dam embankment would overtop. A broad crested weir coefficient of 2.9 was used for this flow condition because of the heavy brush along the crest of the dam.

The three developed hydrographs were routed through the reservoir using a computer program based on stage-storage and stage-discharge data to determine the critical storm duration. The reservoir was assumed to be full to the spillway crest prior to the storm event. The maximum stage height for this dam occurs during a 1 hour duration storm event. This storm duration results in a maximum stage of 1.7 feet above the spillway crest (0.7 feet above crest of dam). Embankment overtopping would occur for about 1 1/2 hours during the test flood. (It should be noted that the 6 hour duration storm will cause embankment overtopping for 6.2 hours at approximately the same maximum stage as the 1 hour duration storm.)

The spillway test flood outflow is 549 CFS. The spillway capacity is only 14 percent of the spillway test flood outflow.

5.5 DAM FAILURE ANALYSIS:

The downstream impact of a dam failure was analyzed by the COE "Rule of Thumb Guidance for Estimating Downstream Failure Hydrographs" dated April 1978.

Based upon an assumed breach width equal to 40% of the dam's width at mid-height, the peak flow leaving the dam would be 9,685 CFS, with an initial depth of 8.1 feet downstream of the dam.

Areas of initial impact include approximately 10 residential homes along Candlewood Hill Brook. The flood wave routing extended about 2 miles downstream to the Village of Higganum, east of Connecticut State Highway Route 9. In the village the flood wave has a water surface elevation of about 85 feet M.S.L. equivalent to a depth of 7.5 feet. The flow is estimated to be 4,400± CFS. The scattered residential homes along Candlewood Hill Brook would experience flood flows ranging from about 4,800 CFS to 8,300 CFS (corresponding water surface elevations El. 150±

to El. 210± M.S.L.) and flow depths of 3 feet to 6 feet. Significant economic loss is to be expected from a dam failure flood wave.

The dam failure analysis indicates that six houses would be flooded to a depth of about 5 feet and four houses would be flooded to depths ranging from 2 to 5 feet.

SECTION 6 - EVALUATION OF STRUCTURAL STABILITY

6.1 VISUAL OBSERVATION:

The visual inspection did not disclose any immediate stability problems. The design of the spillway is such that water flowing over the unlined spillway section can erode soil from the crest of the embankment. Erosion of the crest in the spillway section has occurred. Continued erosion could adversely affect the stability of the dam.

6.2 DESIGN AND CONSTRUCTION DATA:

No original design and construction data are available.

6.3 POST CONSTRUCTION CHANGES:

No information is available about post-construction changes insofar as they are pertinent to the embankment or foundations.

6.4 SEISMIC STABILITY:

Scovill Reservoir Dam is located in Seismic Zone 1 and in accordance with the recommended Phase I guidelines of the Corps of Engineers does not warrant seismic analysis.

SECTION 7 - ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 DAM ASSESSMENT:

a. Condition. Based on a visual inspection, the dam is considered to be in poor condition. There are some features which could affect the long-term performance of the dam if they are not corrected as recommended in Sections 7.2 and 7.3.

The capacity of the spillway is inadequate to pass the 3/4 PMF spillway test flood outflow of 549 CFS without overtopping the dam. The test flood would overtop the dam by about 0.7 feet. The spillway is adequate to pass only about 14 percent of the test flood outflow without overtopping the dam.

b. Adequacy of Information. The lack of in-depth engineering data did not allow for a definitive review. Therefore the assessment of this dam is based solely on the visual inspection, past performance history and sound engineering judgement.

c. Urgency. The recommendations and remedial measures presented below should be implemented by the owner within 1 year after receipt of this Phase I inspection report, with the exception of remedial measure (1) in Section 7.3, which should be implemented immediately.

7.2 RECOMMENDATIONS:

The owner should insure that an engineering investigation be performed by a qualified registered engineer to determine procedures for implementing the following recommendations:

a. The present spillway design should be modified to prevent erosion of soil from the crest of the embankment in the spillway section by water overflowing the spillway.

b. The earth slope above the upstream face of the dam should be repaired and a suitable erosion protection system should be designed and installed to protect the slope.

c. The trees growing at the base of the downstream stone masonry face should be removed.

d. The abandoned outlet structure and discharge channel should be repaired to provide a means for controlling the reservoir level. It is important to control the reservoir level in order to provide emergency drawdown capability and perform required maintenance to the dam.

e. Perform a hydrologic and hydraulic study to determine spillway capacity and freeboard requirements with respect to the spillway test flood discharge and recommend alterations, if required.

7.3 REMEDIAL MEASURES:

a. Operation and Maintenance Procedures.

1) The reservoir level should be lowered to prevent discharge over the spillway until recommendation (a) in Section 7.2 has been implemented.

2) The eroded area on the downstream side of the right abutment should be filled and grass planted where unprotected soil is exposed.

3) Clear crest of brush and trees and establish adequate grass cover.

4) Provisions should be made to monitor the seepage occurring downstream from the dam on a regular basis.

5) Establish a formal annual inspection program by qualified engineers.

6) The annual inspection should include observations and documentation of seepage (photographically or otherwise) so that significant changes in flow can be detected.

7) Develop a formal surveillance and flood warning plan, with an operational procedure to be followed in the event of an emergency.

7.4 ALTERNATIVES:

An appropriate alternative to these recommendations appears to be lowering the reservoir and removing the dam.

APPENDIX A

INSPECTION CHECK LIST

PARTY ORGANIZATION

DATE Nov. 6, 1979

TIME 2:00 P.M.

WEATHER Overcast, 45°

W.S. ELEV. U.S. DN.S.

1. R. Smith, FGA, Project Manager
2. P. Burgess, FGA, Hydraulics/Hydrology
3. R.F. Murdock, GEI, Geotechnical
4. D.R. Shields, GEI, Geotechnical
5. _____

INSPECTED BY

REMARKS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam

DATE: Nov. 6, 1979

AREA EVALUATED	CONDITIONS
<p><u>DAM EMBANKMENT</u></p> <p>Crest Elevation</p> <p>Current Pool Elevation</p> <p>Maximum Impoundment to Date</p> <p>Surface Cracks</p> <p>Pavement Condition</p> <p>Movement or Settlement of Crest</p> <p>Lateral Movement</p> <p>Vertical Alignment</p> <p>Horizontal Alignment</p> <p>Condition at Abutment and at Concrete Structures</p> <p>Indications of Movement of Structural Items on Slopes</p> <p>Trespassing on Slopes</p> <p>Sloughing or Erosion of Slopes or Abutments</p> <p>Rock Slope Protection - Riprap Failures</p> <p>Unusual Movement or Cracking at or near Toes</p> <p>Unusual Embankment or Downstream Seepage</p> <p>Piping or Boils</p> <p>Foundation Drainage Features</p> <p>Toe Drains</p> <p>Instrumentation System</p> <p>Vegetation</p>	<p>None observed.</p> <p>No pavement, grass covered.</p> <p>None observed.</p> <p>None observed.</p> <p>No misalignment observed.</p> <p>No misalignment observed.</p> <p>Erosion at right abutment.</p> <p>None observed.</p> <p>No evidence of trespassing.</p> <p>Extensive erosion on earth slope above upstream face and on downstream side of right abutment.</p> <p>No riprap on upstream slope.</p> <p>None observed.</p> <p>Downstream area wet and spongy. Seepage observed downstream at about Sta. 1+55.</p> <p>None observed.</p> <p>Unknown, none observed.</p> <p>Unknown, none observed.</p> <p>None.</p> <p>Trees growing at base of downstream stone masonry face. Brush on upstream slope and crest.</p>

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam

DATE: Nov. 6, 1979

AREA EVALUATED	CONDITIONS
<p><u>DIKE EMBANKMENT</u></p> <p>Crest Elevation</p> <p>Current Pool Elevation</p> <p>Maximum Impoundment to Date</p> <p>Surface Cracks</p> <p>Pavement Condition</p> <p>Movement or Settlement of Crest</p> <p>Lateral Movement</p> <p>Vertical Alignment</p> <p>Horizontal Alignment</p> <p>Condition at Abutment and at Concrete Structures</p> <p>Indications of Movement of Structural Items on Slopes</p> <p>Trespassing on Slopes</p> <p>Sloughing or Erosion of Slopes or Abutments</p> <p>Rock Slope Protection - Riprap Failures</p> <p>Unusual Movement or Cracking at or near Toes</p> <p>Unusual Embankment or Downstream Seepage</p> <p>Piping or Boils</p> <p>Foundation Drainage Features</p> <p>Toe Drains</p> <p>Instrumentation System</p> <p>Vegetation</p>	<p>Not applicable.</p>

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam

DATE: Nov. 6, 1979

AREA EVALUATED

CONDITIONS

OUTLET WORKS - INTAKE
CHANNEL AND INTAKE
STRUCTURE

a. Approach Channel

Not visible (below reservoir level).

Slope Conditions

Bottom Conditions

Rock Slides or Falls

Log Boom

Debris

Condition of Concrete
Lining

Drains or Weep Holes

b. Intake Structure

Condition of Concrete

Stop Logs and Slots

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam

DATE: Nov. 6, 1979

AREA EVALUATED	CONDITIONS
<u>OUTLET WORKS - CONTROL TOWER</u>	Not applicable.
a. Concrete and Structural	
General Condition	
Condition of Joints	
Spalling	
Visible Reinforcing	
Rusting or Staining of Concrete	
Any Seepage or Efflorescence	
Joint Alignment	
Unusual Seepage or Leaks in Gate Chamber	
Cracks	
Rusting or Corrosion of Steel	
b. Mechanical and Electrical	
Air Vents	
Float Wells	
Crane Hoist	
Elevator	
Hydraulic System	
Service Gates	
Emergency Gates	
Lightning Protection System	
Emergency Power System	
Wiring and Lighting System in Gate Chamber	

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam

DATE: Nov. 6, 1979

AREA EVALUATED	CONDITIONS
<p><u>OUTLET WORKS - TRANSITION</u> <u>AND CONDUIT</u></p> <p>General Condition of Concrete</p> <p>Rust or Staining on Concrete</p> <p>Spalling</p> <p>Erosion or Cavitation</p> <p>Cracking</p> <p>Alignment of Monoliths</p> <p>Alignment of Joints</p> <p>Numbering of Monoliths</p>	

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam

DATE: Nov. 6, 1979

AREA EVALUATED	CONDITIONS
<u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u>	
General Condition of Concrete	
Rust or Staining	
Spalling	
Erosion or Cavitation	
Visible Reinforcing	
Any Seepage or Efflorescence	
Condition at Joints	
Drain Holes	Not applicable.
Channel	Outlet pipe discharges into the downstream spillway channel which is a natural stream bed. Few trees.
Loose Rock or Trees Overhanging Channel	
Condition of Discharge Channel	Fair.

PERIODIC INSPECTION CHECK LIST NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam DATE: Nov. 6, 1979

AREA EVALUATED	CONDITIONS
<u>OUTLET WORKS - SPILLWAY WEIR</u> <u>APPROACH AND DISCHARGE</u> <u>CHANNELS</u>	
a. Approach Channel General Condition Loose Rock Overhanging Channel Trees Overhanging Channel Floor of Approach Channel	Not applicable.
b. Weir and Training Walls General Condition of Concrete Rust or Staining Spalling Any Visible Reinforcing Any Seepage or Efflorescence Drain Holes	The spillway consists of an unlined section of the crest where the downstream masonry wall is stepped-down. Soil has been eroded from the crest by water overflowing the spillway (see text).
c. Discharge Channel General Condition Loose Rock Overhanging Channel Trees Overhanging Channel Floor of Channel Other Obstructions	Not applicable. Discharge channel is a natural stream bed. Fair. None. Few trees overhanging channel. Boulder strewn. None.

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Scovill Reservoir Dam

DATE: Nov. 6, 1979

AREA EVALUATED	CONDITIONS
<u>OUTLET WORKS - SERVICE BRIDGE</u>	
a. Superstructure	
Bearings	
Anchor Bolts	
Bridge Seat	
Longitudinal Members	
Under Side of Deck	
Secondary Bracing	
Deck	
Drainage System	
Railings	
Expansion Joints	
Paint	
b. Abutment & Piers	
General Condition of Concrete	
Alignment of Abutment	
Approach to Bridge	
Condition of Seat and Backwall	

APPENDIX B

ENGINEERING DATA

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM SCOVILL RES. DAM
I.D. NO. CT-00431

ITEM	REMARKS
AS-BUILT DRAWINGS	NONE EXIST
REGIONAL VICINITY MAP	AVAILABLE FROM U.S.G.S.
CONSTRUCTION HISTORY	NONE AVAILABLE
TYPICAL SECTIONS OF DAM	FIELD MEASUREMENTS
OUTLETS - Plan	FIELD MEASUREMENTS
- Details	FIELD MEASUREMENTS
- Constraints	UNKNOWN
- Discharge Ratings	NONE AVAILABLE
RAINFALL/RESERVOIR RECORDS	UNAVAILABLE
DESIGN REPORTS	NONE
GEOLOGY REPORTS	NONE
DESIGN COMPUTATIONS	NONE
HYDROLOGY & HYDRAULICS	NONE
DAM STABILITY	NONE
SEEPAGE STUDIES	NONE
MATERIALS INVESTIGATIONS	NONE
BORINGS RECORDS	NONE
LABORATORY	NONE
FIELD	NONE

NAME OF DAM SCOVILL RES. DAM

CHECK LIST

ENGINEERING DATA

DESIGN, CONSTRUCTION, OPERATION

I.D. NO. CT-00431

PHASE I

ITEM

REMARKS

POST-CONSTRUCTION SURVEYS OF DAM

BORROW SOURCES

MONITORING SYSTEMS

MODIFICATIONS

HIGH POOL RECORDS

POST-CONSTRUCTION ENGINEERING
STUDIES AND REPORTS

PRIOR ACCIDENTS OR FAILURE OF DAM
DESCRIPTION
REPORTS

MAINTENANCE OPERATION RECORDS

SPILLWAY PLAN

SECTIONS

DETAILS

OPERATING EQUIPMENT
PLANS & DETAILS

NONE AVAILABLE

UNKNOWN

NONE

UNKNOWN

NONE

NONE

NONE

NONE

FIELD MEASUREMENTS

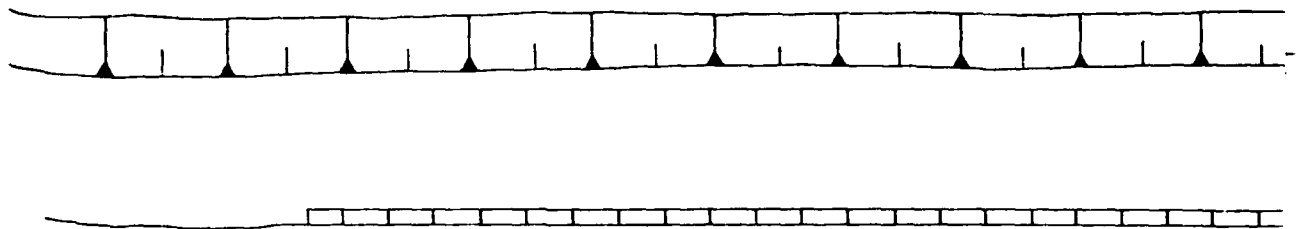
NONE

NONE

FIELD MEASUREMENTS

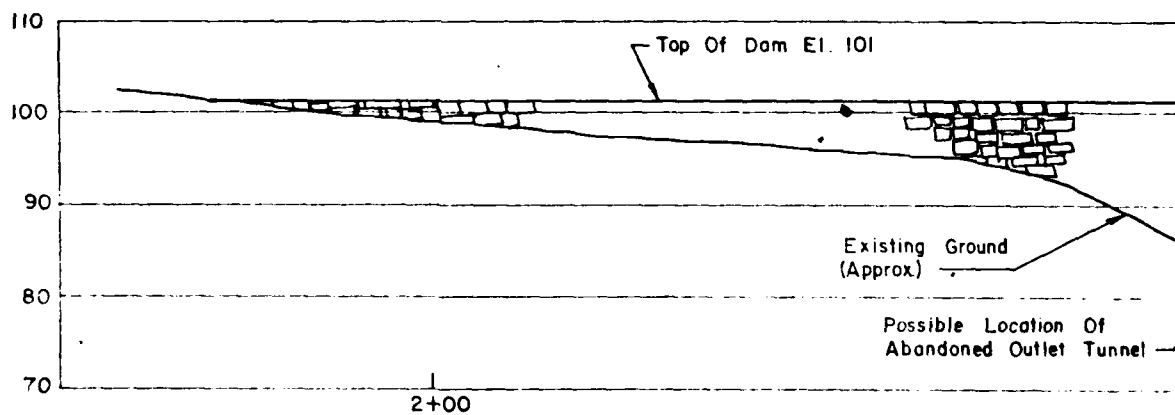
Remains Of Dam Fac
3.5' Of Water

Outlet Structu
(See Note Be



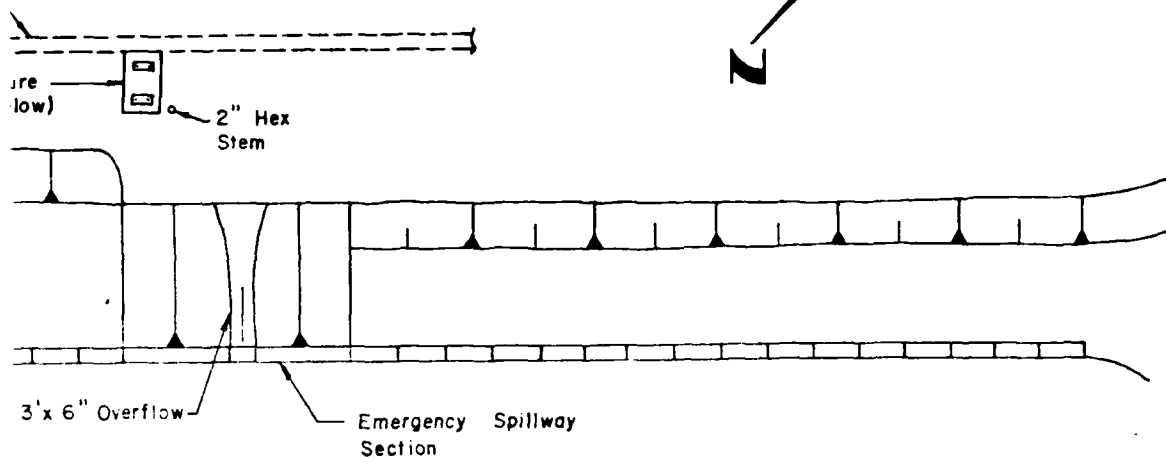
NOTE :

Outlet Structure Has 4 Grouted Bolts
On Top Of Conc. Surface. This Is An
Indication Of A Previously Removed
Appurtenances To This Structure.



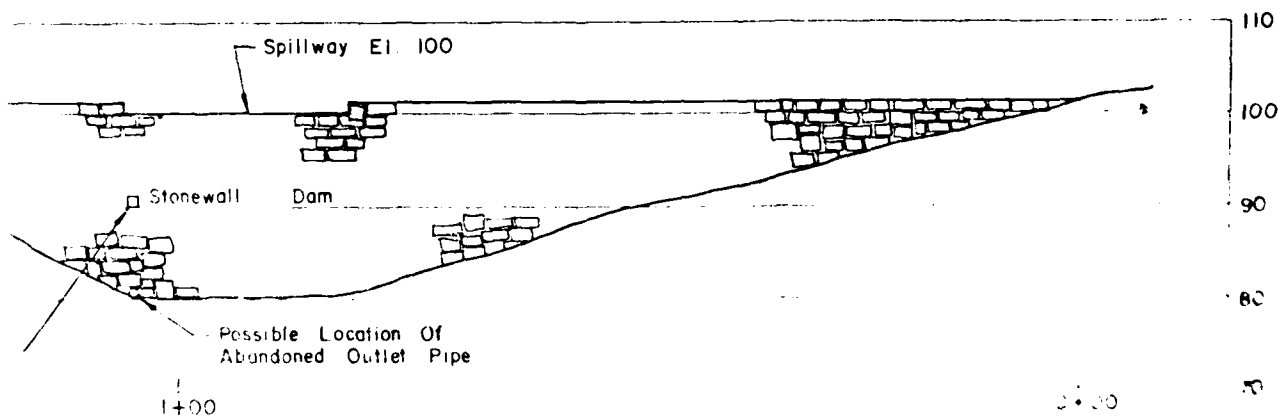
DOWNSTREAM

Ice / Capstone In



PLAN

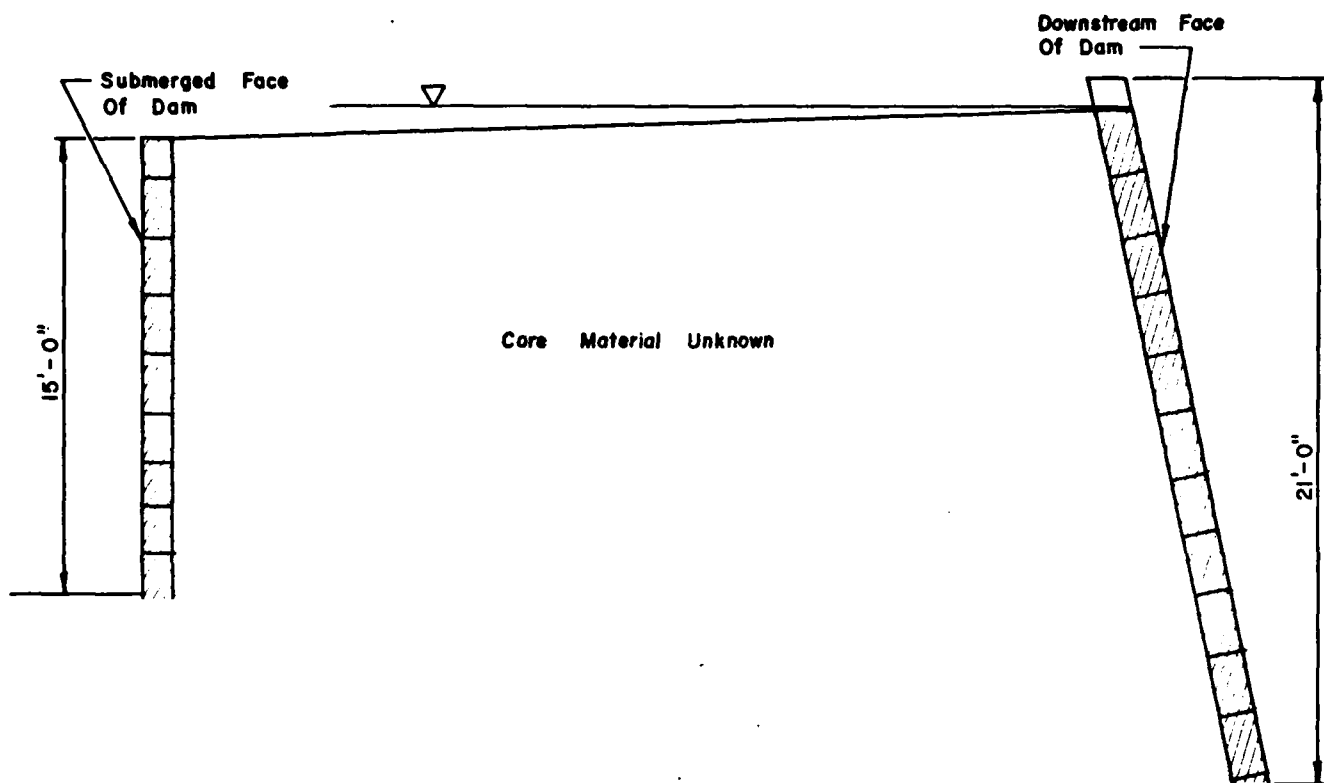
NTS



ELEVATION OF DAM

NTS

SCOVILL RESERVOIR DAM

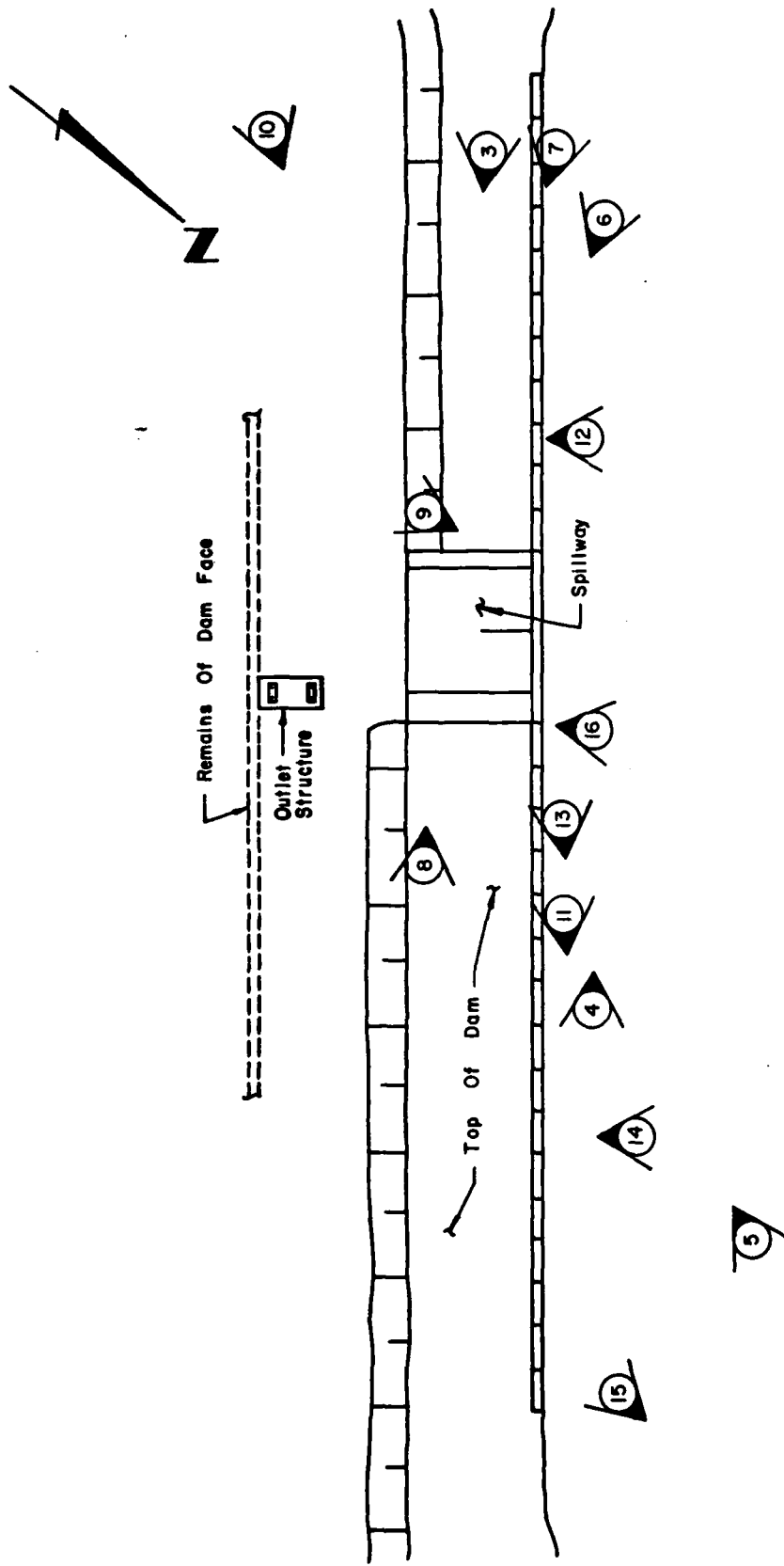


CROSS SECTION AT SPILLWAY

SCOVILL
RESERVOIR DAM

APPENDIX C

PHOTOGRAPHS



LEGEND

- ⑤ Number refers to caption.
- Arrow indicates direction of photograph.

SCOVILL RESERVOIR DAM
PHOTO LOCATION MAP



PHOTO #1: Upstream face and crest of dam from right abutment.



PHOTO #2: Upstream face from right abutment.



PHOTO #3: Crest of dam, looking toward right abutment.

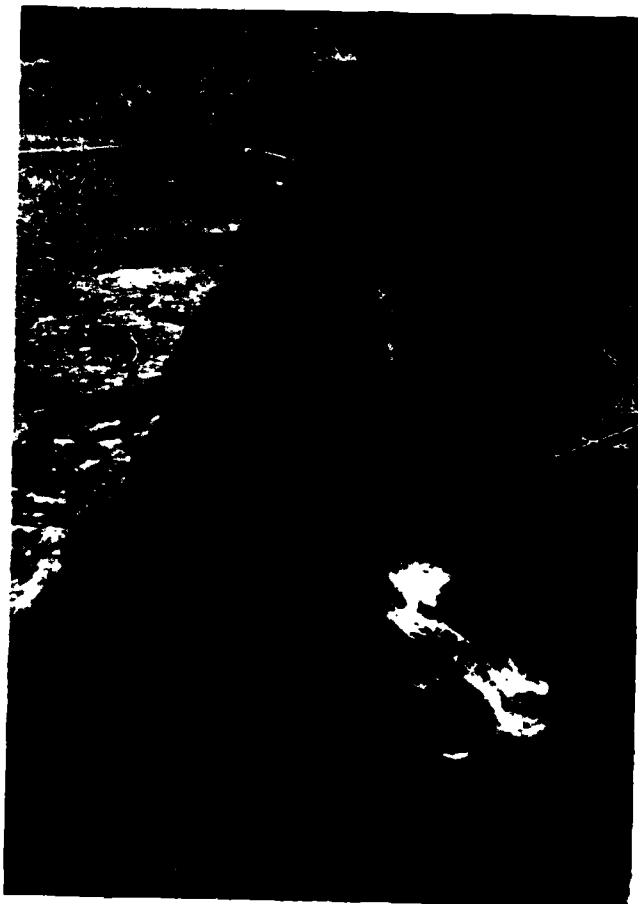


PHOTO #4: Downstream face of dam looking toward left. Note stepped down spillway section.



PHOTO #5: Downstream face of dam, viewed from right side.



PHOTO #6: Downstream face of dam from left side.



PHOTO #7: Downstream face of dam from left side.



PHOTO #8: Crest of dam at spillway section.

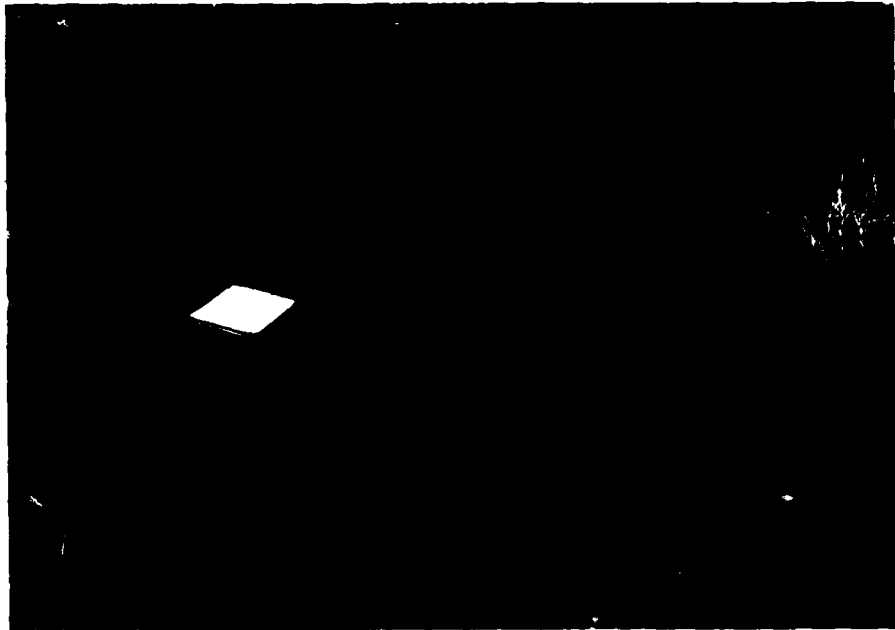


PHOTO #9: Erosion channel in unlined spillway section.

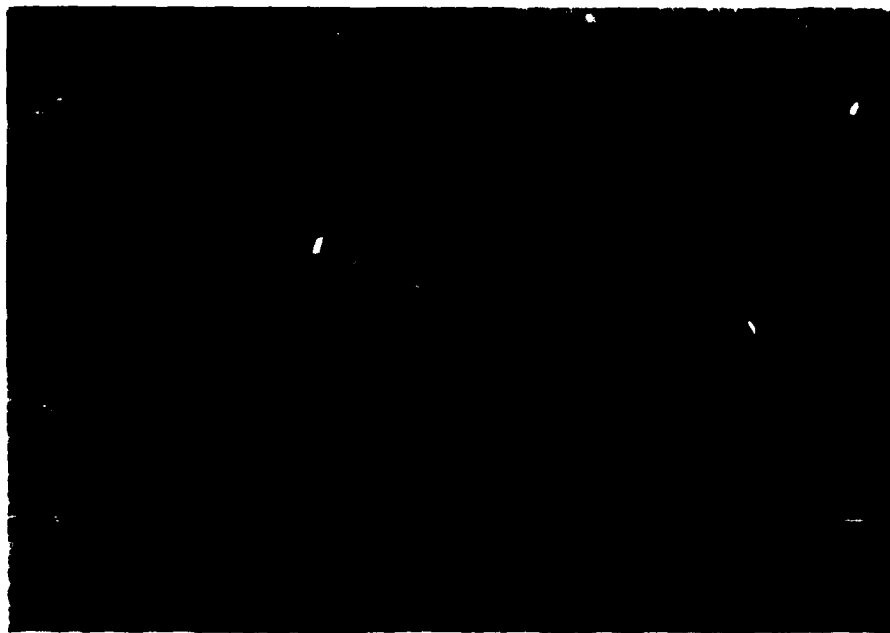


PHOTO #10: Location of upstream face of dam below reservoir level. Capstones approx. 2.5 ft. below water surface.

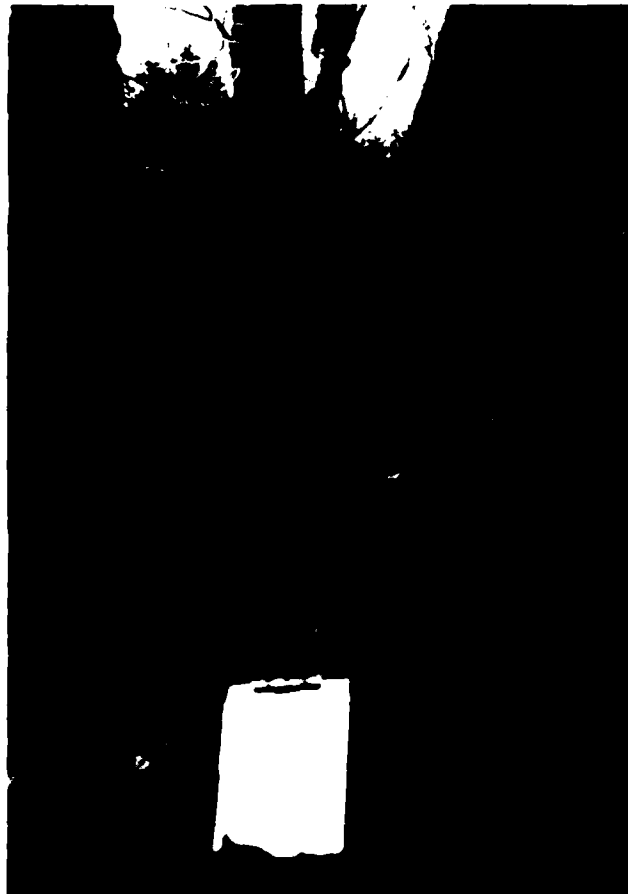


PHOTO #11: Trees growing at base of downstream face.
Note large tree root in foreground growing
into the stone masonry wall.

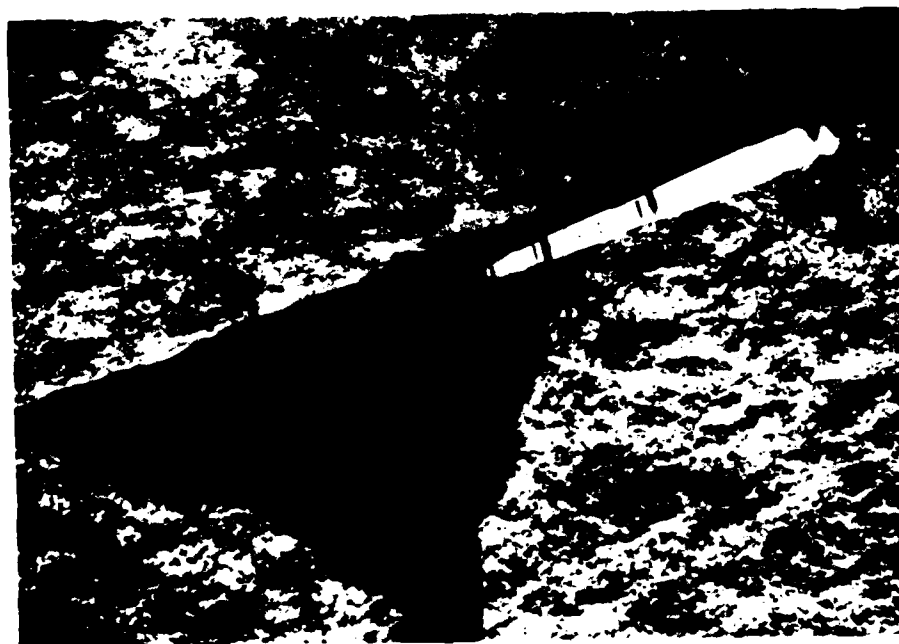


PHOTO #12: Void in stone masonry wall that forms the
downstream face. (Rule extended 4 ft.)



PHOTO #13: Downstream face. Tree roots growing into the stone masonry wall.

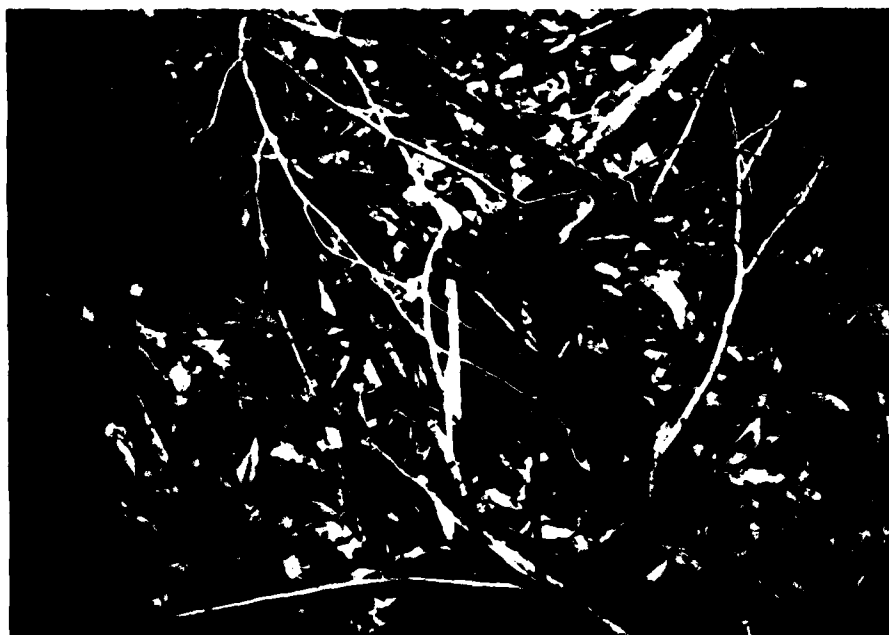


PHOTO #14: Seepage downstream of right side of dam.



PHOTO #15: Erosion on downstream side of right abutment.

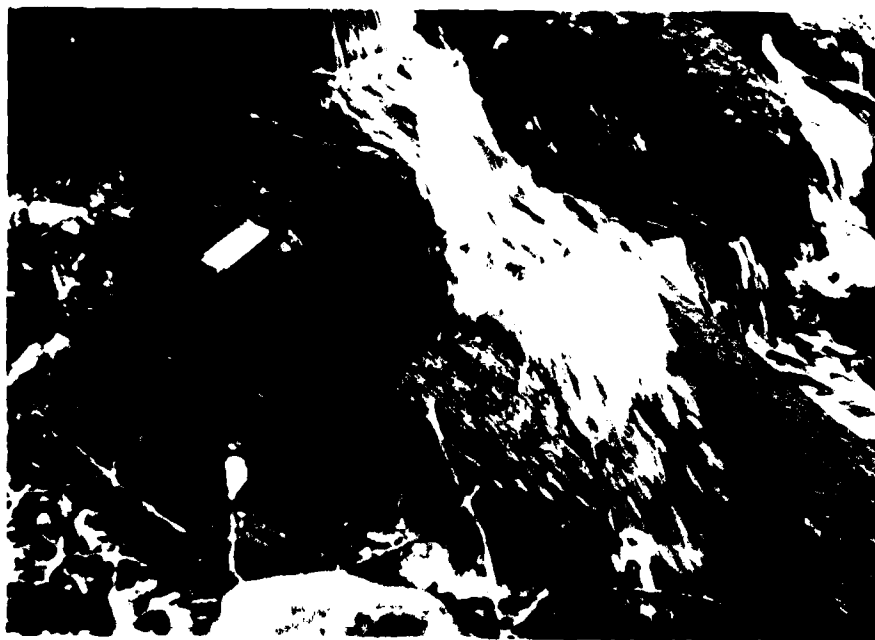


PHOTO #16: 6 inch-diameter outlet at base of wall, vicinity of spillway section.

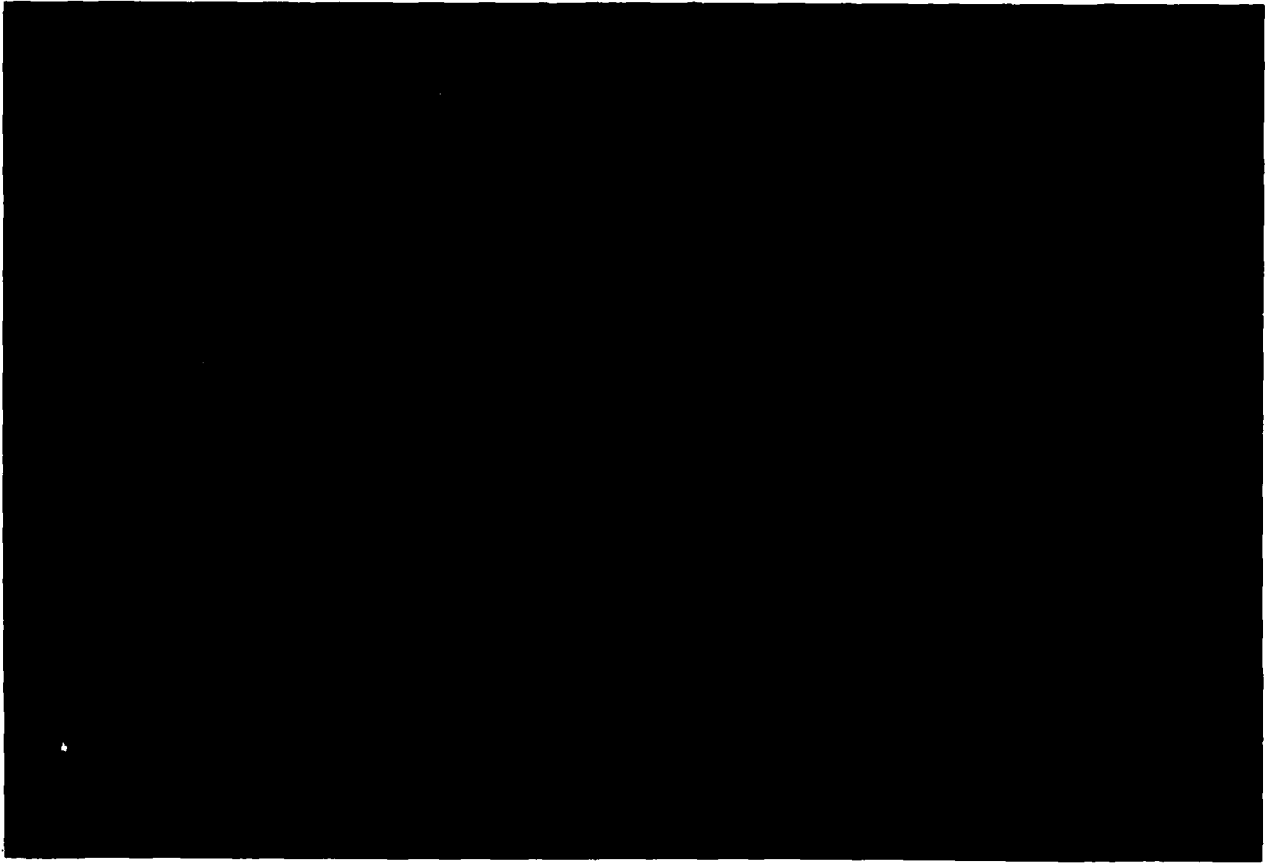


PHOTO 17: Reservoir Area. (Dam at lower left.)

APPENDIX D

HYDROLOGIC AND HYDRAULIC
COMPUTATIONS

PROJECT
S O'VILL RESERVOIR
F DAM, CONN



FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA, NEW HAVEN, CONN 06510/203/789-1200

SHEET NO. 1 OF 2
BY PB DATE 12/6/79
CHK'D BY JGM DATE 12/19/79

DETERMINATION OF SPILLWAY TEST FLOOD*

A. SIZE CLASSIFICATION

Storage Volume (Ac.-Ft.) 350
Height of Dam (Ft.) 21
Size, Classification SMALL

B. HAZARD POTENTIAL CLASSIFICATION

<u>Category</u>	<u>Loss of Life</u>	<u>Economic Loss</u>
Low	None expected	Minimal
Significant	Few	Appreciable
High	More than few	Excessive

Hazard Classification HIGH

C. HYDROLOGIC EVALUATION GUIDELINES

<u>Hazard</u>	<u>Size</u>	<u>Spillway Design Flood</u>
Low	Small	50 to 100-Year Frequency
	Intermediate	100-Year Frequency to 1/2 PMF
	Large	1/2 PMF to PMF
Significant	Small	100-Year Frequency to 1/2 PMF
	Intermediate	1/2 PMF to PMF
	Large	PMF
High	Small	1/2 PMF to PMF
	Intermediate	PMF
	Large	PMF

Spillway Test Flood 3/4 PMF

*Based upon "Recommended Guidelines for Safety Inspection of Dams" Department of the Army, Office of the Chief of Engineers, November 1976.



SPILLWAY TEST FLOOD (3/4 PMF)

RAINFALL

PMP FOR 6 HOUR DURATION (DESIGN OF SMALL DAMS - FIG. 15)

$$PMP_{6HR} = 24 \text{ in.}$$

RECOMMENDED REDUCTION FACTOR = 20%

$$PMP_{6HR} = 24 \times .80 = 19.2 \text{ in}$$

PMP FOR 1 HOUR DURATION (FIG 18)

$$PMP_{1HR} = .5 (19.2) = 9.6 \text{ in}$$

PMP FOR 24 HOUR DURATION (FIG. 16)

$$PMP_{24HR} = 1.20 \times 19.2 = 23.04 \text{ in}$$

RUNOFF

WATERSHED IS COMPOSED OF GLACIAL TILL SOILS.
ASSUME THAT THE SOIL IS PARTIALLY SATURATED

SCS CN VALUE = 80

FROM FIGURE A-4

1 HR RAINFALL = 9.6 IN \therefore RUNOFF 7.1 IN

6 HR RAINFALL = 19.2 IN \therefore RUNOFF 16.5 IN

24 HR RAINFALL = 23.04 IN \therefore RUNOFF 20.0 IN



3/4 PROBABLE MAXIMUM FLOOD

$$Q = \frac{484AR}{T_p}$$

$$A = \text{AREA}, 0.27 \text{ mi}^2$$

$$R = \text{RUNOFF (IN)}$$

$$T_c: L = 2500'$$

$$AH = 190$$

$$S = .076$$

$$T_c = .00013 \frac{L^{0.77}}{S^{0.385}} = 0.15 \text{ HRS}$$

$$T_p = 0.5 + .6 T_c$$

Q 1 HOUR

$$T_p = 0.5 + .6 (.15) = 0.59 \text{ HRS}$$

$$Q_{1 \text{ HR}} = \frac{484 \times 0.27 \times 7.1 (.75)}{0.59} = 1179 \text{ cfs}$$

Q 6 HOUR

$$T_p = 0.5 + .6 (.15) = 3.09 \text{ HRS}$$

$$Q_{6 \text{ HR}} = \frac{484 \times 0.27 \times 16.5 (.75)}{3.09} = 523 \text{ cfs}$$

Q 24 HOUR

$$T_p = 2.5 + .6 (.15) = 12.09 \text{ HRS}$$

$$Q_{24 \text{ HR}} = \frac{484 \times 0.27 \times 20.0 (.75)}{12.09} = 162 \text{ cfs}$$



VOLUME OF RUNOFF

1 HOUR DURATION STORM

$$(.75) \frac{7.1 \text{ IN}}{12 \text{ IN/FT}} \times 0.27 \text{ mi}^2 \times 640 \text{ AC/mi}^2 = 76.7 \text{ AC-FT}$$

6 HOUR DURATION STORM

$$(.75) \frac{16.5 \text{ IN}}{12 \text{ IN/FT}} \times 0.27 \text{ mi}^2 \times 640 \text{ AC/mi}^2 = 178.2 \text{ AC-FT}$$

24 HOUR DURATION STORM

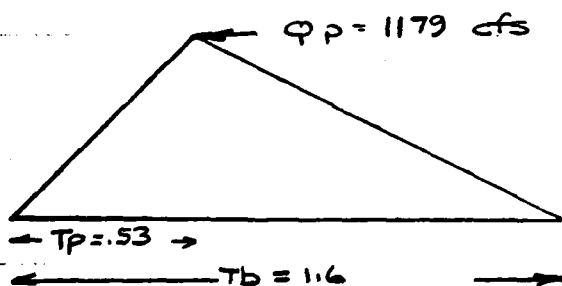
$$(.75) \frac{20.0 \text{ IN}}{12 \text{ IN/FT}} \times 0.27 \text{ mi}^2 \times 640 \text{ AC/mi}^2 = 216 \text{ AC-FT}$$



HYDROGRAPHS

A TRIANGULAR HYDROGRAPH IS TO BE USED FOR THE ROUTING OF THE TEST FLOODS THROUGH THE RESERVOIR. A ROUTING WILL BE DONE FOR THE 1 HOUR, 6 HOUR, AND 24 HOUR DURATION $3/4$ PMFTU DETERMINE THE CONTROLLING STORM. THE DURATION OF THE RUNOFF (T_b) WILL BE SET SO THAT THE VOLUME OF THE HYDROGRAPH EQUALS THE PREVIOUSLY DETERMINED VOLUME OF RUNOFF.

HYDROGRAPH 1 HOUR DURATION $3/4$ PMF



$$Vol = \frac{1}{2} Q_p T_b$$

$$T_b = \frac{76.7 \text{ ACRES-FT} \times 43560 \text{ AC-FT}}{.5 \times 1179 \text{ CF/SEC} \times 3600 \text{ SEC/HR}}$$

$$= 1.57 \text{ SAY } 1.6 \text{ HOURS}$$

$$\text{SET } T_p = \frac{1}{3} T_b$$

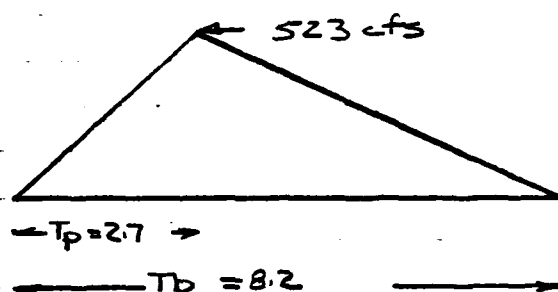
$$T_p = .53$$



TABULAR HYDROGRAPH 1 HOUR (3/4 PMF)

HOURS	Q
0	0
.2	445
.4	890
.53	1179
.6	1102
.8	881
1.0	661
1.2	441
1.4	220
1.6	0

HYDROGRAPH 6 HOUR DURATION 3/4 PMF



$$Vol = 1/2 Q_p T_d$$

$$T_d = \frac{178.2 \text{ AC-FT} \times 43560 \text{ FT}^2/\text{AC}}{.5 \times 523 \text{ CFS} \times 3600 \text{ S/HR}}$$

$$T_d = 8.2 \text{ HRS}$$

$$T_p = 1/3(8.2) = 2.7 \text{ HRS}$$

TABULAR HYDROGRAPH 6 HOUR 3/4 PMF

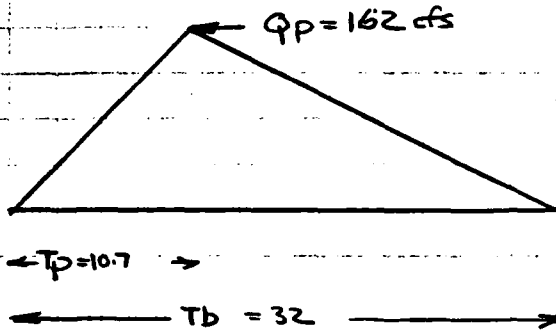
HRS	Q	HRS	Q
0	0		
1	194	6	209
2	387	7	114
2.7	523	8.2	0
3	494		
4	399		
5	304		

D-6



HYDROGRAPH 24 HOUR DURATION

3/4 PMF



$$VOL = \frac{1}{2} Q_p T_b$$

$$T_b = \frac{216 \text{ AC-FT} \times 43560 \text{ AC-FT}}{.5 \times 162 \text{ cfs} \times 3600 \text{ s/hr}}$$

$$T_b = 32 \text{ HRS}$$

$$T_p = T_b \times \frac{1}{3} = 10.7 \text{ HRS}$$

TABULAR HYDROGRAPH

HOURS	Q (cfs)
0	0
3	45
6	91
9	136
10.7	162
12	152
15	129
18	106
21	84
24	61
27	38
30	15
32	0

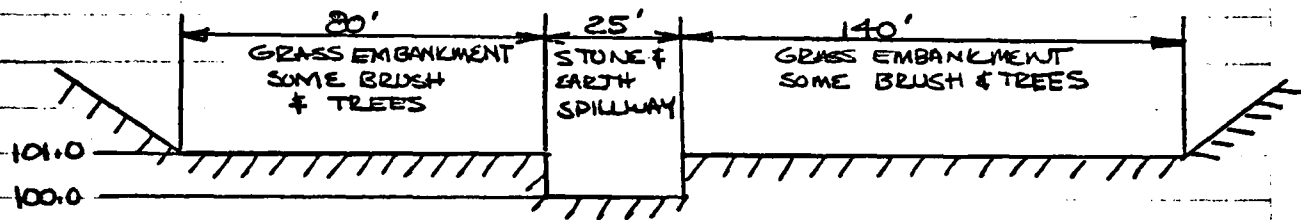
PROJECT SCOWILL RES



FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA, NEW HAVEN, CONN. 06510/203/789-1260

SHEET NO. 8 OF 27
BY PB DATE 12/6/79
CHK'D. BY JBM DATE 12/19/79

SPILLWAY AND OVERFLOW SECTION DATA



<u>SEGMENT</u>	<u>ITEM</u>	<u>WEIR COEFFICIENT</u>	<u>LENGTH</u>	<u>ELEV</u>
1.	GRASS EMB.	2.9	80'	101.0
2	SPILLWAY	3.0	25'	100.0
3	GRASS EMB	2.9	140'	101.0

PROJECT

COVILLE RESERVOIR



FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA, NEW HAVEN, CONN. 06510/203/789-1280

SHEET NO. 9 OF 27
BY PB DATE 12/6/79
CHK'D BY JGM DATE 12/19/79

SUMMARY OF FLOOD ROUTING

STORM DURATION

MAX. STAGE

STORAGE CAPACITY
EXCEEDING TOP OF DAM

1 HOUR

101.71

20.2 acre-feet

6 HOUR

101.59

16.8 acre-feet

24 HOUR

101.09

2.5 acre-feet

SCOVILL RES HDM 1 HR HYD 79 90 10 FLOOD ROUTING PB 12 20 79

INPUT DATA:				UNSUBMERGED WEIR				ELEVATION OF WEIR			
SEGMENT	1	2	3	DISCHARGE COEFFICIENT	2.9	LENGTH OF WEIR	80	ELEVATION OF WEIR	-	101	
SEGMENT	2			DISCHARGE COEFFICIENT	3	LENGTH OF WEIR	25	ELEVATION OF WEIR	-	100	
SEGMENT	3			DISCHARGE COEFFICIENT	2.9	LENGTH OF WEIR	140	ELEVATION OF WEIR	-	101	
IE=100.0 IV=				0.0	E=100.0 A= 27.50	E=115.0 A= 40.40					
HR	INFLOW	MASS INFLOW	WATER EL.	TAIL WATER	OUTFLOW	MASS OUTFLOW	STORAGE(R)	STORAGE(A)			
0.00	0CFS	0.00AC-F	100.00FT	100.00FT	0CFS	0.00AC-F	0.00AC-F	0.00AC-F			
0.20	445CFS	3.67AC-F	100.13FT	0.00FT	3CFS	0.02AC-F	3.64AC-F	3.64AC-F			
0.40	890CFS	14.71AC-F	100.52FT	0.00FT	28CFS	0.29AC-F	14.41AC-F	14.41AC-F			
0.53	1,179CFS	25.82AC-F	100.89FT	0.00FT	63CFS	0.78AC-F	25.03AC-F	25.03AC-F			
0.60	1,102CFS	32.42AC-F	101.11FT	0.00FT	112CFS	1.29AC-F	31.12AC-F	31.12AC-F			
0.80	881CFS	48.81AC-F	101.53FT	0.00FT	395CFS	5.48AC-F	43.32AC-F	43.32AC-F			
1.00	661CFS	61.55AC-F	101.70FT	0.00FT	548CFS	13.28AC-F	48.26AC-F	48.26AC-F			
1.20	441CFS	70.66AC-F	101.71FT	0.00FT	549CFS	22.36AC-F	48.29AC-F	48.29AC-F			
1.40	220CFS	76.12AC-F	101.61FT	0.00FT	458CFS	30.70AC-F	45.42AC-F	45.42AC-F			
1.60	0CFS	77.94AC-F	101.45FT	0.00FT	323CFS	37.16AC-F	40.78AC-F	40.78AC-F			
2.00	0CFS	77.94AC-F	101.17FT	0.00FT	144CFS	44.90AC-F	33.04AC-F	33.04AC-F			
5.00	0CFS	77.94AC-F	100.44FT	0.00FT	22CFS	65.60AC-F	12.33AC-F	12.33AC-F			
10.00	0CFS	77.94AC-F	100.22FT	0.00FT	7CFS	71.83AC-F	6.11AC-F	6.11AC-F			

SCOVILL RES. 6 HR HYD

79-90-10

FLOOD ROUTING

DKS

12/06/79

INPUT DATA:
 SEGMENT 1 UNSUBMERGED WEIR
 SEGMENT 2 DISCHARGE COEFFICIENT = 2.9 LENGTH OF WEIR = 80 ELEVATION OF WEIR = 101
 SEGMENT 3 DISCHARGE COEFFICIENT = 3 LENGTH OF WEIR = 25 ELEVATION OF WEIR = 100
 IE-100.0 IV= DISCHARGE COEFFICIENT = 2.9 LENGTH OF WEIR = 140 ELEVATION OF WEIR = 101
 0.0 E=100.0 A= 27.50 E=115.0 A= 40.40

HOURL	INFLOW	MASS INFLOW	WATER EL.	TAIL WATER	OUTFLOW	MASS OUTFLOW	STORAGE(R)	STORAGE(A)
0.00	0CFS	0.00AC-F	100.00FT	100.00FT	0CFS	0.00AC-F	0.00AC-F	0.00AC-F
1.00	194CFS	8.01AC-F	100.27FT	0.00FT	10CFS	0.44AC-F	7.57AC-F	7.57AC-F
2.00	387CFS	32.02AC-F	101.00FT	0.00FT	75CFS	4.00AC-F	28.01AC-F	28.01AC-F
2.70	523CFS	58.34AC-F	101.48FT	0.00FT	354CFS	16.44AC-F	41.90AC-F	41.90AC-F
3.00	494CFS	70.95AC-F	101.58FT	0.00FT	436CFS	26.24AC-F	44.70AC-F	44.70AC-F
4.00	399CFS	107.85AC-F	101.59FT	0.00FT	447CFS	62.77AC-F	45.07AC-F	45.07AC-F
5.00	304CFS	136.90AC-F	101.47FT	0.00FT	342CFS	95.42AC-F	41.47AC-F	41.47AC-F
6.00	209CFS	158.10AC-F	101.35FT	0.00FT	253CFS	120.05AC-F	38.05AC-F	38.05AC-F
7.00	114CFS	171.45AC-F	101.21FT	0.00FT	165CFS	137.34AC-F	34.10AC-F	34.10AC-F
8.20	0CFS	177.10AC-F	100.99FT	0.00FT	74CFS	149.24AC-F	27.86AC-F	27.86AC-F
15.00	0CFS	177.10AC-F	100.18FT	0.00FT	6CFS	171.94AC-F	5.15AC-F	5.15AC-F

SCOVILL RES 24 HR HYD 79-90-10 FLOOD ROUTING DKS 12/17/79

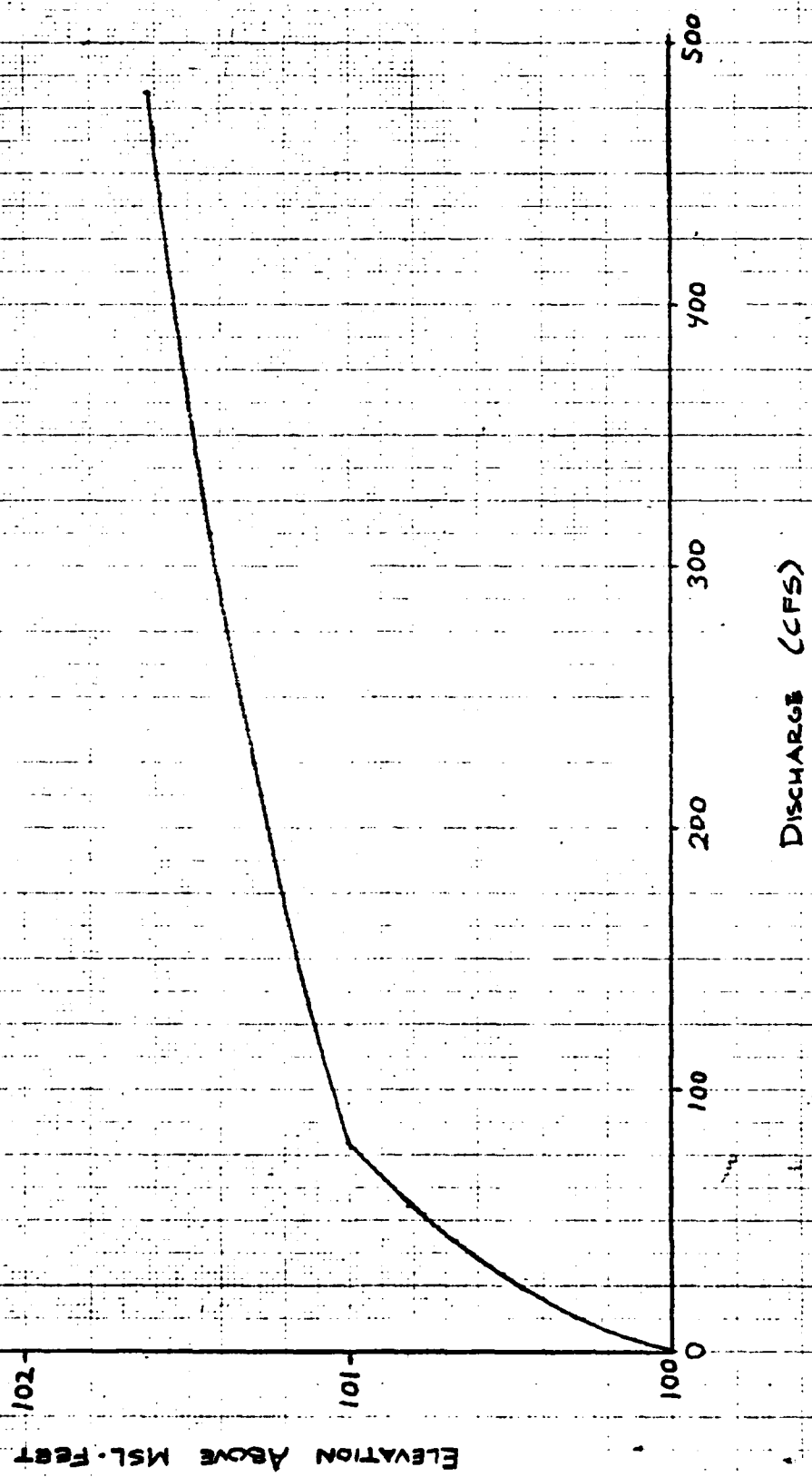
INPUT DATA:

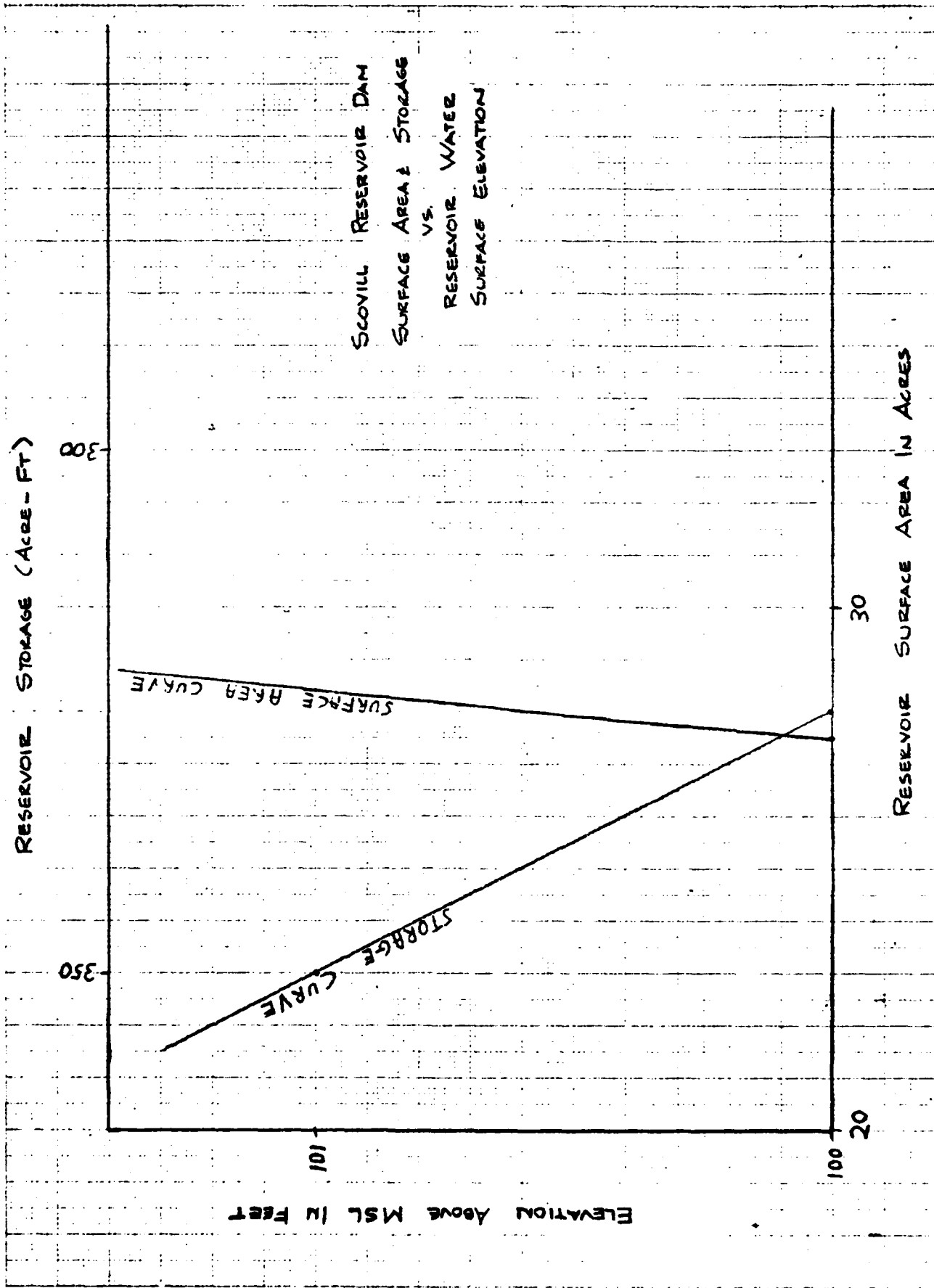
SEGMENT 1 UNSUBMERGED WEIR DISCHARGE COEFFICIENT = 2.9 LENGTH OF WEIR = 80 ELEVATION OF WEIR = 101
 SEGMENT 2 DISCHARGE COEFFICIENT = 3 LENGTH OF WEIR = 25 ELEVATION OF WEIR = 100
 SEGMENT 3 DISCHARGE COEFFICIENT = 2.9 LENGTH OF WEIR = 140 ELEVATION OF WEIR = 101
 IE-100.0 IV- 0.0 E=100.0 A= 27.50 E=115.0 A= 40.40

hour	INFLOW	MASS INFLOW	WATER EL.	TAIL WATER	OUTFLOW	MASS OUTFLOW	STORAGE (R)	STORAGE (A)
0.00	0CFS	0.00AC-F	100.00FT	100.00FT	0CFS	0.00AC-F	0.00AC-F	0.00AC-F
3.00	45CFS	5.57AC-F	100.17FT	0.00FT	5CFS	0.69AC-F	4.88AC-F	4.88AC-F
6.00	91CFS	22.43AC-F	100.60FT	0.00FT	35CFS	5.72AC-F	16.70AC-F	16.70AC-F
9.00	136CFS	50.57AC-F	101.05FT	0.00FT	89CFS	21.11AC-F	29.45AC-F	29.45AC-F
10.70	162CFS	71.51AC-F	101.19FT	0.00FT	152CFS	38.07AC-F	33.43AC-F	33.43AC-F
12.00	152CFS	88.38AC-F	101.20FT	0.00FT	157CFS	54.68AC-F	33.69AC-F	33.69AC-F
15.00	129CFS	123.21AC-F	101.15FT	0.00FT	133CFS	90.76AC-F	32.44AC-F	32.44AC-F
18.00	106CFS	152.34AC-F	101.11FT	0.00FT	111CFS	121.23AC-F	31.10AC-F	31.10AC-F
21.00	84CFS	175.90AC-F	101.05FT	0.00FT	90CFS	146.32AC-F	29.57AC-F	29.57AC-F
24.00	61CFS	193.87AC-F	100.97FT	0.00FT	72CFS	166.54AC-F	27.32AC-F	27.32AC-F
27.00	38CFS	206.14AC-F	100.84FT	0.00FT	57CFS	182.72AC-F	23.42AC-F	23.42AC-F
30.00	15CFS	212.71AC-F	100.64FT	0.00FT	39CFS	194.73AC-F	17.98AC-F	17.98AC-F
32.00	0CFS	213.95AC-F	100.49FT	0.00FT	26CFS	200.14AC-F	13.81AC-F	13.81AC-F
35.00	0CFS	213.95AC-F	100.32FT	0.00FT	13CFS	205.10AC-F	8.85AC-F	8.85AC-F
40.00	0CFS	213.95AC-F	100.17FT	0.00FT	5CFS	209.06AC-F	4.88AC-F	4.88AC-F



SCOVILL RESERVOIR DAM
STAGE DISCHARGE CURVE





FGA FLOOD WAVE ROUTING

APPROXIMATE FLOOD WAVE ROUTING BASED UPON U.S. ARMY CORPS
OF ENGINEERS' "RULE OF THUMB GUIDANCE FOR ESTIMATING
DOWNSTREAM DAM FAILURE HYDROGRAPHS" DATED APRIL, 1978.

INITIAL STATION = 0 +0
INITIAL WAVE HEIGHT = 21.0 FT
ASSUMED BREACH WIDTH = 60.0 FT
INITIAL RESERVOIR STORAGE = 357 ACRE-FT
COMPUTED FLOOD WAVE PEAK FLOW = 9,702 CFS

STATION 0+90

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
N = 0.080					
-510.0 FT	500.0 FT	-230.0 FT	480.0 FT	-110.0 FT	450.0 FT
-80.0 FT	440.0 FT	-12.0 FT	422.0 FT		
N = 0.040					
-12.0 FT	422.0 FT	-8.0 FT	420.0 FT	8.0 FT	420.0 FT
12.0 FT	422.0 FT				
N = 0.080					
12.0 FT	422.0 FT	120.0 FT	450.0 FT	310.0 FT	470.0 FT
450.0 FT	470.0 FT				

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
70.8 SF	23.9 FT	0.080	11.5 FPS	819CFS
187.0 SF	24.9 FT	0.040	42.9 FPS	8,029CFS
72.3 SF	24.4 FT	0.080	11.5 FPS	837CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
420.0 FT	8.1 FT	428.1 FT	330 SF	29.3 FPS	9,685 CFS	0.0910

STATION 10 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
N = 0.080					
-620.0 FT	400.0 FT	-390.0 FT	370.0 FT	-80.0 FT	350.0 FT
-20.0 FT	340.0 FT				
N = 0.040					
-20.0 FT	340.0 FT	-8.0 FT	337.0 FT	8.0 FT	337.0 FT
20.0 FT	340.0 FT				
N = 0.080					
20.0 FT	340.0 FT	90.0 FT	350.0 FT	200.0 FT	370.0 FT
360.0 FT	370.0 FT	570.0 FT	390.0 FT	800.0 FT	400.0 FT

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
48.0 SF	24.3 FT	0.080	8.4 FPS	404CFS
244.0 SF	40.7 FT	0.040	35.3 FPS	8,614CFS
56.0 SF	28.2 FT	0.080	8.4 FPS	472CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
337.0 FT	7.0 FT	344.0 FT	348 SF	27.2 FPS	9,491 CFS	0.0830

STATION 20 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
N = 0.080					
-630.0 FT	350.0 FT	-320.0 FT	300.0 FT	-130.0 FT	280.0 FT
-30.0 FT	270.0 FT	-12.0 FT	265.0 FT		
N = 0.040					
-12.0 FT	265.0 FT	-8.0 FT	263.0 FT	8.0 FT	263.0 FT
12.0 FT	265.0 FT				
N = 0.080					
12.0 FT	265.0 FT	70.0 FT	270.0 FT	150.0 FT	280.0 FT
290.0 FT	290.0 FT	450.0 FT	300.0 FT		

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
71.2 SF	29.8 FT	0.080	8.1 FPS	578CFS
186.7 SF	24.9 FT	0.040	34.8 FPS	6,501CFS
214.5 SF	67.1 FT	0.080	9.8 FPS	2,116CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
263.0 FT	8.1 FT	271.1 FT	472 SF	19.4 FPS	9,196 CFS	0.0600

STATION 32+80

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
N = 0.080					
-1270.0 FT	300.0 FT	-990.0 FT	250.0 FT	-960.0 FT	240.0 FT
N = 0.040					
-960.0 FT	240.0 FT	-830.0 FT	230.0 FT	-630.0 FT	210.0 FT
-70.0 FT	210.0 FT	-8.0 FT	208.0 FT	8.0 FT	208.0 FT
180.0 FT	210.0 FT	370.0 FT	220.0 FT	400.0 FT	240.0 FT
N = 0.080					
400.0 FT	240.0 FT	680.0 FT	280.0 FT		

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
1,138.7 SF	840.7 FT	0.040	7.3 FPS	8,350 CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
208.0 FT	3.0 FT	211.0 FT	1,138 SF	7.3 FPS	8,350 CFS	0.0260

STATION 47 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.040			
-730.0 FT	250.0 FT	-550.0 FT	210.0 FT	-380.0 FT	200.0 FT
-8.0 FT	197.0 FT	8.0 FT	197.0 FT	40.0 FT	200.0 FT
500.0 FT	210.0 FT	700.0 FT	250.0 FT		

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
1,336.3 SF	512.4 FT	0.040	5.4 FPS	7,285 CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
197.0 FT	4.4 FT	201.4 FT	1,336 SF	5.4 FPS	7,285 CFS	0.0060

STATION 65 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.040			
-330.0 FT	250.0 FT	-170.0 FT	230.0 FT	-100.0 FT	195.0 FT
80.0 FT	195.0 FT	230.0 FT	220.0 FT	500.0 FT	230.0 FT
800.0 FT	250.0 FT				

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
1,486.4 SF	239.3 FT	0.040	3.9 FPS	5,900CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
195.0 FT	7.1 FT	202.1 FT	1,486 SF	3.9 FPS	5,900 CFS	0.0010

STATION 76 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
N = 0.080					
-350.0 FT	250.0 FT	-100.0 FT	200.0 FT	-50.0 FT	190.0 FT
-12.0 FT	182.0 FT				
N = 0.040					
-12.0 FT	182.0 FT	-8.0 FT	180.0 FT	8.0 FT	180.0 FT
12.0 FT	182.0 FT				
N = 0.080					
12.0 FT	182.0 FT	700.0 FT	190.0 FT	740.0 FT	200.0 FT
1050.0 FT	250.0 FT				

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
63.2 SF	25.0 FT	0.080	2.8 FPS	182CFS
163.8 SF	24.9 FT	0.040	10.3 FPS	1,786CFS
1,145.7 SF	443.9 FT	0.080	2.9 FPS	3,350CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
180.0 FT	7.1 FT	187.1 FT	1,372 SF	3.8 FPS	5,319 CFS	0.0070

STATION 92+50

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
-150.0 FT	200.0 FT	-40.0 FT	170.0 FT	-30.0 FT	165.0 FT

N = 0.080		N = 0.040	
-30.0 FT	165.0 FT	30.0 FT	165.0 FT
110.0 FT	180.0 FT	150.0 FT	200.0 FT

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
38.0 SF	15.3 FT	0.080	3.7 FPS	142CFS
405.5 SF	78.8 FT	0.040	12.1 FPS	4,916CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
165.0 FT	6.0 FT	171.0 FT	443 SF	11.4 FPS	5,058 CFS	0.0120

STATION 101 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
N = 0.080					
-510.0 FT	200.0 FT	-270.0 FT	170.0 FT	-40.0 FT	150.0 FT
-12.0 FT	146.0 FT				
N = 0.040					
-12.0 FT	146.0 FT	-8.0 FT	144.0 FT	8.0 FT	144.0 FT
12.0 FT	146.0 FT				
N = 0.080					
12.0 FT	146.0 FT	190.0 FT	150.0 FT	300.0 FT	200.0 FT

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
75.4 SF	35.4 FT	0.080	4.0 FPS	302CFS
150.8 SF	24.9 FT	0.040	16.0 FPS	2,424CFS
466.4 SF	179.5 FT	0.080	4.5 FPS	2,134CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
144.0 FT	6.6 FT	150.6 FT	692 SF	7.0 FPS	4,862 CFS	0.0170

STATION 115 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.080			
-200.0 FT	160.0 FT	-30.0 FT	130.0 FT	-12.0 FT	121.0 FT
		N = 0.040			
-12.0 FT	121.0 FT	-8.0 FT	119.0 FT	8.0 FT	119.0 FT
12.0 FT	121.0 FT	320.0 FT	130.0 FT	500.0 FT	370.0 FT

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
17.8 SF	9.4 FT	0.080	4.1 FPS	73CFS
446.3 SF	169.4 FT	0.040	10.2 FPS	4,582CFS

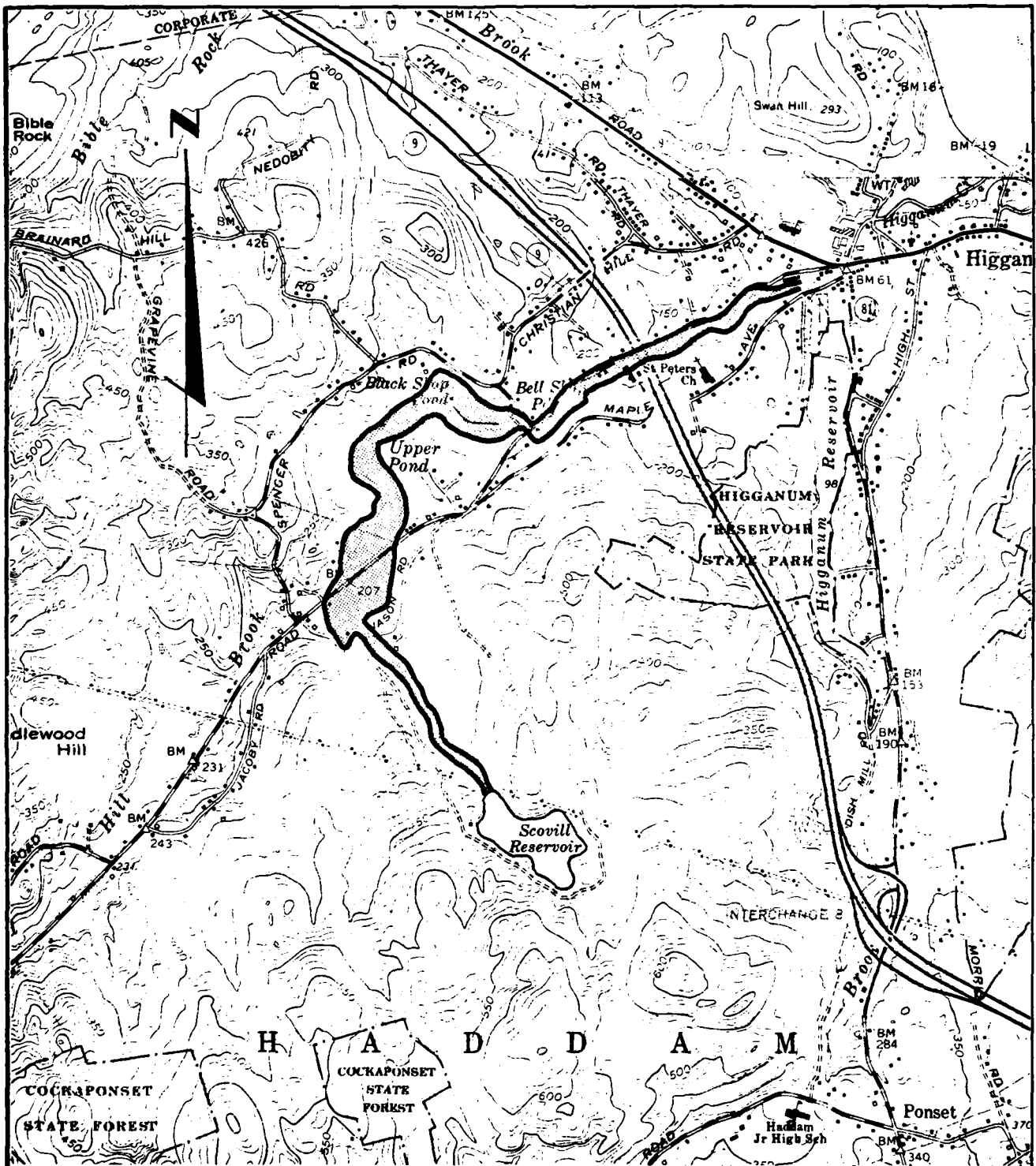
INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
119.0 FT	6.2 FT	125.2 FT	464 SF	10.0 FPS	4,655 CFS	0.0210

STATION 134 +0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
N = 0.080					
-190.0 FT	120.0 FT	-70.0 FT	100.0 FT		
N = 0.040					
-70.0 FT	100.0 FT	-30.0 FT	90.0 FT	-12.0 FT	79.0 FT
-8.0 FT	77.0 FT	8.0 FT	77.0 FT	12.0 FT	79.0 FT
190.0 FT	100.0 FT	300.0 FT	110.0 FT		

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
324.8 SF	82.4 FT	0.040	13.7 FPS	4,466 CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
77.0 FT	7.4 FT	84.4 FT	324 SF	13.7 FPS	4,466 CFS	0.0220



SCALE IN FEET
2000 1000 0 2000

SCOVILL RESERVOIR DAM
DAM FAILURE ANALYSIS
IMPACT AREAS
HADDAM, CONNECTICUT

FLAHERTY • GIAVARA ASSOCIATES, P.C.

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APPENDIX E

INFORMATION AS CONTAINED IN THE
NATIONAL INVENTORY OF DAMS

This Phase I Inspection Report on Scovill Reservoir Dam has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.

Aramast Mahtesian

ARAMAST MAHTESIAN, MEMBER
Geotechnical Engineering Branch
Engineering Division

Carney M. Terzian

CARNEY M. TERZIAN, MEMBER
Design Branch
Engineering Division

Richard J. DiBuono

RICHARD DIBUONO, CHAIRMAN
Water Control Branch
Engineering Division

APPROVAL RECOMMENDED:

Joe B. Fryar

JOE B. FRYAR
Chief, Engineering Division

END

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